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Rejection Sensitivity, Self-Monitoring, and Heterosocial Adjustment of Young Men with Attention-Deficit/Hyperactivity Disorder (ADHD)

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Rejection Sensitivity, Self-Monitoring, and Heterosocial Adjustment of Young Men with Attention-Deficit/Hyperactivity Disorder (ADHD)

by

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This dissertation is dedicated to my parents, Pierre and Victoria, who have been a constant source of love and support. Without their encouragement, I doubt I would have made it this far. Thanks cannot repay that debt. I love you both so much.

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Rejection Sensitivity, Self-Monitoring, and Heterosocial Adjustment of Young Men with Attention-Deficit/Hyperactivity Disorder (ADHD)

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Attention-Deficit/Hyperactivity Disorder (ADHD) is a prevalent condition originating in childhood (characterized by impairment related to hyperactivity, impulsivity, and inattention) and often associated with negative peer relations. Despite convincing evidence that ADHD persists beyond childhood, there is a relative lack of research on adult outcome in the social domain. Further, most of the existing research has treated ADHD as a unitary construct, ignoring possible distinctions between the major *Diagnostic and Statistical Manual of Mental Disorders, 4th Edition* (*DSM-IV*; American Psychiatric Association (APA), 1994) ADHD-Combined and ADHD-Primarily Inattentive subtypes.

Self-monitoring (SM) and rejection sensitivity (RS) are cognitive-behavioral tendencies that have been shown to impact the romantic relational adjustment of adults in non-diagnosed populations. This study examined the pattern of RS, SM, and select romantic, friendship, an self-relational outcomes in young men with ADHD-C (n = 31), ADHD-IA (n = 22), and a non-diagnosed control group (n = 24), each drawn from an

ethnically diverse sample of heterosexual, community college and 4-year university students.

Results from self- and partner-report measures did not detect the expected differences in RS or SM among the ADHD and control groups. However, as compared to controls, ADHD-IA participants conformed more to experimenter preferences and higher negative affect was reported by all ADHD participants in an in-vivo interaction. Specific findings regarding the effects of RS on romantic outcomes distinguished the ADHD-C and ADHD-IA subtypes, with low RS in the ADHD-IA and non-diagnosed control groups being associated with a buffering (i.e., positive) effect for relational outcomes, whereas a largely negative effect for low RS was noted among the ADHD-C participants. In addition, ADHD-C participants reported higher engagement and satisfaction in romantic relationships and friendships as compared to ADHD-IA participants, as well as earlier and broader sexual experience than both their ADHD-IA and non-diagnosed peers. This work adds to the understanding of long-term social outcomes related to ADHD, and extends the literature regarding the effects of RS to a clinical population.

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Chapter 1: Introduction

Attention-Deficit/Hyperactivity Disorder (ADHD) was identified as Attention Deficit Disorder (ADD) in 1980 (DSM-III; American Psychiatric Association (APA), 1980), yet has had previous incarnations as "minimal brain dysfunction," "hyperkinesis," and "hyperactive child syndrome," among others, spanning several prior decades (Wender, 1995). The condition now called ADHD has been the focus of thousands of investigations (Swanson et al., 1993) dating back to the case studies of Still (1902), and is recognized by the U.S. Surgeon General, American Medical Association, American Psychological Association, and the American Academy of Pediatrics, among other organizations, as a clinically impairing disorder (ADHD Consensus Group, 2002). The primary symptom domains of ADHD are impulsivity (e.g., blurts out answers before questions have been completed), hyperactivity (e.g., fidgets with hands or feet or squirms in seat), and inattention (e.g., forgetful in daily activities; DSM-IV; APA, 1994).

ADHD is one of the most common psychological disorders originating in childhood, with a generally accepted prevalence estimate for ADHD in the United States of 3% to 5%. However, several independent epidemiological studies have reported prevalence rates of 10% or higher in non-referred, community samples (Rowland et al., 2002; Nolan, Gadow, & Sprafkin, 2001; Wolraich, Hannah, Pinnock, Baumgaertel, & Brown, 1996) and findings from several early studies lend support to this relatively high occurrence estimate (Wender, 1995).

Diagnostic Features, Gender Ratio, and Prevalence

The typical onset of full-blown ADHD occurs from 3 to 7 years of age (Kronenberger & Meyer, 2001). In fact, to receive a DSM-IV diagnosis of ADHD, some

impairing symptoms must appear prior to age 7, although prominent researchers have argued for the discontinuation of this age-of-onset criterion (AOC) on both practical (i.e., questionable validity of retrospection) and empirical (i.e., little symptomatic difference between groups above and below AOC) grounds (Barkley & Biederman, 1997). Overall, consideration should be given to developmental level in making a diagnosis of ADHD; hyperactive-impulsive and/or inattentive behaviors must substantially exceed the norm of same-age peers and result in adaptive impairment in at least two distinct domains (e.g., home and school).

The current DSM nosology acknowledges three subtypes of ADHD: a combined-symptom subtype (ADHD-C) characterized by significant hyperactive-impulsive *and* inattention symptoms; a primarily inattentive subtype (ADHD-IA) with only inattentive symptoms elevated beyond a clinical threshold; and a primarily hyperactive subtype (ADHD-H) with significant hyperactive-impulsive symptoms with a relative absence of inattention. The incidence of the newly introduced ADHD-H subtype is relatively low; it comprises approximately 15% of both clinically referred and school-based epidemiological ADHD populations as compared to ADHD-C (60% of clinically referred and 30% of school identified cases) and ADHD-IA (25% of clinically referred and 55% of school identified cases; Wilens, Biederman, & Spencer, 2002; Nolan et al., 2001).

Across all of the currently recognized ADHD subtypes, incidence has been substantially higher for males than females, with overall gender ratios ranging from nearly 2:1 in epidemiological studies (e.g., Gaub & Carlson, 1997a) and a recent study of a clinically-referred adult population (Millstein et al., 1997) to 10:1 in clinically-referred child populations (Wilens et al., 2002). There is some evidence to suggest, however, that

this gender ratio differs among the individual subtypes. Gaub and Carlson (1997b) conducted a meta-analysis of 18 epidemiological studies examining gender differences, finding that girls with ADHD exhibit fewer symptoms of hyperactivity and aggression as compared to boys with ADHD. These findings were corroborated by a more recent ADHD gender differences meta-analysis of 38 published and unpublished studies (Gershon, 2002), which suggested that girls with ADHD have less hyperactivity than male peers (yet potentially higher rates of internalizing comorbidity). A follow-up study of a large, non-referred school-based sample further supported these prior findings and indicated that girls with "pure" ADHD may generally be perceived as higher functioning in the school setting (Carlson, Tamm, & Gaub, 1997). Within the Carlson group's sample (Carlson et al., 1997), coinciding with their other findings, the most even split for gender occurred in the ADHD-IA subtype, which had a 2.3 male:1 female ratio; ADHD-C and ADHD-H had ratios of 2.8:1 and 4.1:1, respectively (Gaub & Carlson, 1997a).

While many studies have confirmed the reliability and validity of both the ADHD-C and ADHD-IA subtypes and the general hyperactive-impulsive/inattentive symptom clusters through neuropsychological (e.g., Nigg, Blaskey, Huang-Pollock, & Rappley, 2002), statistical (e.g., Milich, Balentine, & Lynam, 2001), and behavioral distinctions (e.g., Lahey et al., 1994), evidence exists for neuropsychological similarity between children with ADHD-H and non-diagnosed children (Chhabildas, Pennington, & Willcutt, 2001). Further, the typically delayed developmental occurrence of inattentive symptoms (Barkley, 1996) suggests that at least some of those children who are identified at a young (< 6 years old) age may in fact have a prodromal ADHD-C condition. Given the combination of such evidence that ADHD-H may not be a unique diagnostic category

and its low incidence in comparison to the other subtypes, it is perhaps not surprising that relatively little research has focused on ADHD-H. This study follows this pattern of investigation, concentrating on identifying differences between the ADHD-C and ADHD-IA subtypes.

Etiological Factors

Several competing theories on causal factors for the development of ADHD have been investigated, such as diet (Conners, 1980), familial stressors (Frick & Lahey, 1991), maternal behavior (Jacobvitz & Sroufe, 1987) and negative attachment (Erdman, 2000). Burgeoning neurological research, including investigation of markers such as absent right ear advantage (Combs, 2002), reflects the now common belief that the vast majority of ADHD cases have a primarily biological (i.e., structural and functional brain differences) and genetic etiology that is manifested by cognitive differences (ADHD Consensus Group, 2002; Kronenberger & Meyer, 2001). Evidence for these etiological assumptions is discussed briefly below.

Cognitive and neurological findings

It is almost certain that multiple cognitive processes and neurological differences underlie the heterogeneous condition of ADHD. Swanson and colleagues (1998) describe three basic processes inherent to attention: alerting (inhibiting perception of background "noise"), orienting ("mobilizing" appropriate neural processing resources), and executive control (the coordination of specialized neural processes that directs behavior toward a goal). Based on a review of existent brain-imaging literature, Posner and Raichle (1994) proposed neuroanatomical bases for these attentional subcomponents; the alerting network resides in right frontal lobe regions; orienting is centered in the posterior parietal

lobes, superior colliculus and thalamus; and the executive control foci are the anterior cingulated gyrus, left lateral frontal lobe, and basal ganglia. Swanson and colleagues (1998), in a review of ADHD research employing electroencephalographic (EEG) source imaging (ESI), single photon computed (SPECT) and positron emission tomography (PET), and magnetic resonance imaging (MRI), found initial support for both anatomical and functional brain differences between individuals with and without ADHD in the neural regions noted above for alerting, orienting, and executive control. It also appears likely that a specific dysfunction of dopamine (and, potentially, norepinephrine) neurotransmitters is part of the underlying ADHD neuropathology (Castellanos & Tannock, 2002; Wilens et al., 2002).

Barkley (1996) articulated an etiological theory for hyperactive-impulsive ADHD symptomatology hinging, in particular, on the executive function of behavioral inhibition and, secondarily, working memory, self-regulation of affect/motivation/arousal, internalization of speech, and reconstitution (i.e., analysis, synthesis, creativity and mental simulation). This model accounts for documented performance deficits in motor coordination, mental computation, planning, verbal fluency, effort allocation, organization, self-directed speech, following instructions, and emotional control that are associated with ADHD (Barkley, 1996). The Barkley model is further supported by the relative dysfunction of the frontal and prefrontal lobes—associated in the right hemisphere with self-control and, along with the striatal region, targets of early neurological hypotheses regarding ADHD (Heilman, Voeller, & Nadeau, 1991)—noted in numerous ADHD samples (e.g., Swanson et al., 1998; Shaywitz, Fletcher, Pugh, Klorman, & Shaywitz, 1999; Wilens et al., 2002).

A cautionary note regarding a conceptualization of ADHD as primarily a disorder of executive functions has been sounded by Sergeant and colleagues (Sergeant, Geurts, & Oosterlaan, 2002). This group's comprehensive review of findings regarding ADHD from the neuropsychological task (e.g., stop, Stroop, Wisconsin Card Sort) literature yields further evidence that dysfunctions in inhibition, set shifting, working memory, planning, and fluency (all subsumed in Barkley's model) are associated with ADHD. However, none of the examined executive function deficits were unique to the ADHD population, with autistic and, especially, ODD/CD samples exhibiting substantial dysfunction in these domains, as well. Further, the authors rightly note that the literature examining the relationship between ADHD symptoms and executive dysfunction has not yet adequately differentiated between the ADHD subtypes.

Only a small proportion of the neurocognitive research on ADHD has differentiated samples by subtype; further, some investigators who have made cognitive comparisons between heterogeneous ADHD groups have found minimal distinction between the subtypes (Chhabildas et al., 2001; Nigg et al., 2002). However, a handful of studies with this focus have yielded interesting findings. Nigg and colleagues (2002) found that, for their sample of elementary school age males, motor inhibition deficits were limited to participants with ADHD-C. Carlson and Mann (2002) found that in a similarly aged, large school sample, sluggish cognitive tempo (SCT; i.e., drowsiness, lethargy, and hypoactivity) differentiates ADHD-IA from ADHD-C, and further suggest that a subgroup of individuals with low SCT diagnosed with ADHD-IA may more accurately be sub-threshold ADHD-C cases, given the homogeneity of characteristics in the high SCT ADHD-IA subgroup.

While adhering to a similar, neurocognitive conception of ADHD as advocated by Barkley (1996) and others (Sonuga-Barke, 2002), Castellanos and Tannock (2002) have illustrated and advocated for differentiation of the ADHD subtypes by neurological instead of behavioral differences. In their review, Castellanos and Tannock document substantial evidence that deficits in four cognitive functions—response inhibition, delay tolerance, temporal processing, and working memory—and corresponding neural differences distinguish potential ADHD endophenotypes (i.e., groupings of individuals based on specific neurocognitive dysfunction). The investigators note that emerging evidence (Chhabildas et al., 2001) has shown that level of inattention, not hyperactivity-impulsivity (HI), is the best predictor of slowed response inhibition, and that deficits in visual-spatial working memory may further distinguish those with primarily inattentive symptoms.

Genetic findings

One of the Barkley model's implicit assumptions is that deficits in behavioral inhibition central to ADHD symptomatology are driven to a significant degree by genetic factors (Barkley, 1996), which is echoed by a general consensus of the psychological research community (ADHD Consensus Group, 2002). ADHD heritability rates from twin studies have ranged from .60 to 1.0 (Connor, 2002; ADHD Consensus Group, 2002; Wilens et al., 2002); given these rates, it is reasonable to conclude that at least 80% of the variance in the ADHD phenotype can be attributed to genetic versus non-genetic, biological environmental factors (e.g., pre- and/or postnatal exposure to lead, alcohol, or nicotine toxins; Barkley, 1990).

Because ADHD is a complex, heterogeneous disorder characterized by numerous behavioral, cognitive, neurological, and motivational differences, it is very likely that multiple genes are involved in its etiology. Investigation to date has primarily concentrated on the dopamine transporter protein and post-synaptic D4 receptor (DRD4) due to the involvement of these sites in the pharmacological action of stimulant medications (Connor, 2002). A reliable pattern of association has been established in case-control and family based molecular genetic studies between the presence of the 7-repeat allele of the DRD4 gene and the clinical expression of ADHD (Faraone, Doyle, Mick & Biederman, 2001). However, the odds ratio for the presence of the 7-repeat allele has been consistently measured at approximately 1.4, a modest effect, meaning that the risk of displaying full-blown ADHD symptomatology is increased by just approximately 40% for individuals who carry this allele (Castellanos & Tannock, 2002).

In addition, there is evidence that even within the ADHD group the presence of the 7-repeat allele is inconsistent and that actually its *absence* within this group is associated with greater dysfunction. Using a sample of mixed-subtype ADHD children, Swanson and colleagues (2000) found that only the "7-absent" ADHD subgroup differed from non-diagnosed controls on reaction time measures, whereas 7-absent and 7-present ADHD subgroups were undistinguishable across parent- and teacher-reported ADHD symptom severity.

While the dopamine transporter and DRD4 genes have been the focus of inquiry, genes associated with the serotonergic and noradrenergic systems have also been implicated. A molecular genetic study by Comings and colleagues (2000) of 336 individuals with Tourette's Syndrome found that 12 genes (6 noradrenergic and 3 each of

dopaminergic and serotonergic), when combined, accounted for approximately 12% of the phenotypic variance on a quantitative measure of ADHD. Obviously, while this is a promising new area of investigation, a definitive answer on the genes that play a role in ADHD expression remains unknown.

Associated Features

Comorbidity and co-occurring difficulties

Children with ADHD most commonly experience difficulties in the home life (e.g., Weiss & Hechtman, 1993) and academic domains (Manuzza, Klein, Bessler, Malloy, & LaPadula, 1993). ADHD in childhood has been associated with dysfunctional outcomes in several other basic domains, including poor motor task coordination, negative peer relations (review in Barkley, 1998), and parent-reported sleep disturbance (Stein et al., 2002; Ball & Koloian, 1995).

In addition to these characteristic patterns of adaptive impairment, children with ADHD quite often suffer from one or multiple psychiatric comorbidities, most commonly oppositional defiant disorder (ODD) or conduct disorder (CD) but also including learning (LD), mood, anxiety, communication, and Tourette's disorders (APA, 1994). A review of epidemiological and clinical studies indicates that over 50% of identified ADHD cases will also receive an ODD or CD diagnosis (Pliszka, Carlson, & Swanson, 1999), a comorbidity that is especially common for individuals with ADHD-C (Jensen, Martin, & Cantwell, 1997).

This mixture of aggression, hyperactivity-impulsivity, and/or inattention, is particularly problematic; there is evidence that children with a combined ADHD-CD diagnosis are even more likely to have an additional reading LD comorbidity (39%) vs.

their purely ADHD peers (19%), typically have an early onset of dysfunction (< age 5), are rated as most severely impaired by both teachers and peers, and are at greater risk for substance abuse (McGee, Williams, & Silva, 1984; Pliszka et al., 1999; Carlson et al., 1997; Wilens et al., 2002). In addition to more frequently exhibiting antisocial behaviors, those with an ODD or CD diagnosis will likely experience even more pervasive negative peer relations than their ADHD-only peers (Hinshaw & Melnick, 1995). The incremental impact of aggression combined with ADHD in the social domain will be further addressed below.

Motivational style

There is a somewhat limited literature investigating how motivational impairment may underlie the performance deficits of children with ADHD, focusing primarily on academic-related skills and outcomes. As with research in the neurocognitive realm, early research efforts in this area treated ADHD as a unitary construct. Despite this limitation, such investigations established a relationship between ADHD (particularly of the HI spectrum) and deficient performance on tasks requiring sustained effort and motivation (Douglas, 1972; Barkley, 1990; Milich, 1994), which is now a core symptom of the syndrome (APA, 1994). Relatedly, Milich (1994) also notes that ADHD boys tend to overly and unrealistically estimate their chances of task success and are quick to give up on challenging problems. Such findings have spurred current theorists to include impaired motivation in explanatory models of ADHD (e.g., Barkley, 1997).

Carlson and colleagues have recently conducted several studies on potential motivational differences between the ADHD subtypes. An initial study conducted in the early 1990's using a large, ethnically-representative, elementary school sample suggested

that children identified as ADHD-IA were rated as more apathetic or unmotivated versus children of the ADHD-C subtype (Carlson & Mann, 2000). A subsequent investigation using a smaller, predominantly male sample of children between 9 and 12 years of age used multiple measures and informants to attempt further distinction of the subtypes (Carlson, Booth, Shin & Canu, 2002). The ADHD-C group self-rated as more motivated (vs. ADHD-IA group) to perform well to impress their teachers and be perceived as superior to others. This self rating was corroborated by parents ratings nominating ADHD-C children as more motivated by competition than their ADHD-IA peers. Further, teacher reports revealed trends for the ADHD-IA group being more cooperative (vs. ADHD-C group) with peers in group projects yet less academically motivated than a non-diagnosed control group by simple curiosity (versus teacher recognition).

Specific Dysfunction: Peer Relations of Children with ADHD

As noted above, peer relations problems represent an area of functioning that has been shown to be especially problematic for children with ADHD (Barkley, 1998; Erhardt & Hinshaw, 1994). Because of the potential for childhood peer rejection to have immediate emotive and cognitive (e.g., self-conceptual) impact, evidence that peer rejection is predictive of later maladjustment (Melnick & Hinshaw, 1996), and its particular relevance to the topic of this investigation, it is important to elaborate on findings in this domain. A brief review of the deleterious long-term effects of childhood peer rejection follows. The substantial research documenting the social impairment of children with ADHD is summarized thereafter, as is the growing body of supporting work identifying cognitive, motivational, behavioral and subtype-specific factors in the social rejection of these children.

Role of negative peer relations in later adjustment

A history of negative childhood social interactions leads not only to a negative reputational bias toward the child within the peer group (Henker & Whalen, 1999), but also several other negative long-term outcomes. The skills and competencies that one develops in positive peer interaction and reciprocal friendships—which actually receive very scant attention in the current ADHD literature—build a base for future positive adjustment. Bagwell and colleagues review long-term outcomes for those individuals unable to establish such a base in the general population (Bagwell, Schmidt, Newcomb, & Bukowski, 2001). First, and with ADHD perhaps powerfully mediated by the aforementioned negative interpretive bias of peers, poor childhood peer relations are linked to loneliness in adolescence. Second, peer rejected children are at greater risk for school dropout, delinquent or criminal behavior, and mental health disturbance through adulthood. Third, having dysfunctional romantic or peer relationships in adolescence and adulthood effectively eliminates coping resources available for other life stressors, in turn possibly increasing externalizing behavior problems (Kupersmidt, Burchinal, & Patterson, 1995), emotional distress, health problems, and abuse of intoxicants (Newcomb & Bentler, 1988; Bagwell et al., 2001).

Still drawing primarily on data from the general population, Landau and Moore (1991) further note that disturbance in childhood peer relations has actually been associated with most negative indicators of adolescent and adult mental health; among those not mentioned by Bagwell and colleagues (2001) are job termination (including dishonorable military discharge) and number of contacts with the police (Landau & Moore, 1991). Unfortunately, little has been done to specifically investigate longitudinal

outcomes of ADHD children who concurrently experience peer rejection. However, Greene and colleagues conducted a 4-year (adolescent) follow-up of boys fitting this description, finding that, in comparison to non-rejected ADHD peers, this group had a higher incidence of psychological comorbidity—especially conduct and substance abuse disorders—even after initial mood, attention, and conduct problems were statistically controlled for (Greene, Biederman, Faraone, Sienna, & Garcia-Jetton, 1997).

Impairment

Estimates indicate that approximately 50% of children with ADHD will encounter significant peer relationship difficulties (Guevremont & Dumas, 1994; Barkley, 1990), although this may be a conservative estimate (Gaub & Carlson, 1997, see below). Drawing on previous work indicating that children with ADHD experience overwhelming peer rejection (see review in Landau & Moore, 1991), Hinshaw and Melnick (1995) conducted insightful studies of peer interactions and sociometric status in mixed groups of children (ADHD and non-diagnosed controls) over the course of several day-camp programs. Children with ADHD were rejected by non-diagnosed controls and their ADHD group peers, a finding that was corroborated by teacher and parent estimations of social status. Further, the children with ADHD experienced rejection very quickly, having lower peer ratings of "desired as friend" after 1 and 3 days (Erhardt & Hinshaw, 1994). Temporally, this is likely an underestimation of the rapidity of rejection, as others have observed withdrawal from and highly negative reactions toward children with ADHD after only 20 to 30 minutes of peer interaction (Milich & Landau, 1982; Pelham & Bender, 1982). It is of note that Erhardt and Hinshaw (1994) also found

that non-behavioral variables such as attractiveness, academic prowess, and athleticism failed to contribute to the prediction of this immediate peer rejection.

Cognitive factors: Awareness and Emotions

Clearly, the ADHD population is heterogenous in terms of social dysfunction (e.g., accepted-rejected, aggressive-non-aggressive, active-inactive). However, researchers have linked certain cognitive and behavioral factors with the social problems typically associated with the disorder. As mentioned previously, aggressive behavioral patterns in children with ADHD contribute to peer rejection. Other possible factors—which may not necessarily be independent—include impaired social information-processing, motivation, communication skills, and emotional regulation.

Social information processing. Effective social information-processing requires a set of skills, including the knowledge of situational behavioral expectations, the accurate perception and utilization of cues, perspective taking, outcome evaluation, and response modulation (Henker & Whalen, 1999). Research by Dodge (1980; also see Crick & Dodge, 1996), for example, has shown an association between childhood aggression and inaccurate attribution of hostility in ambiguous social interactions. Children with ADHD, given core impairments in behavioral inhibition, working memory, reconstitution, internalization of speech, and self-regulation of motivation and arousal (Barkley, 1996), may experience difficulties at multiple social information-processing stages.

To illustrate, Zentall and colleagues (2001) compared the responses of children with elevated ADHD-C symptoms versus a non-symptomatic control group to stories of socially problematic situations in reference to a 3-step information-processing framework: 1) identifying a social problem (encoding), 2) predicting what might happen

next (representation), and 3) generating effective solutions (analysis/response). Controlling for IQ and receptive language ability, the children with ADHD-C symptoms showed pervasive deficits, as reflected by their less frequent identification of relevant evidential cues, associated social problems, and possible immediate and long-term outcomes. The authors suggest that difficulties in step 1 may be due to selective attention to salient yet irrelevant cues or difficulty maintaining situational details in working memory. Ultimately, the failure in this early stage of social cognition impairs successful outcomes in subsequent steps. The authors additionally noted that, when the ADHD-symptomatic children did nominate predictions (i.e., step 2), the majority were negative in nature (opposite from the control group), suggesting that such children—who likely have encountered pervasively negative social interactions—have a conditioned negative social prediction bias, which could further impair accurate representation of social situations.

Given encoding difficulties and a likely limited range of social experience it is perhaps not surprising that ADHD-symptomatic children did not spontaneously generate as many solutions to social dilemmas as compared to controls. However, when Zentall and colleagues (2001) provided a story recall exercise before soliciting potential solutions, the ADHD-symptomatic group generated as many relevant solutions as controls. This result is in line with previously cited research suggesting a performance—rather than a comprehension—social deficit. Such a recall exercise likely cues reconstitution and essentially external organization for problem solving, which might also make up for a relative lack of internal speech (see below).

Causal attribution is an additional putative social information-processing deficiency associated with ADHD. Comparisons between boys with ADHD and nondiagnosed peers revealed that the ADHD group was more likely to attribute positive social outcomes to internal causes yet less likely to make internal attributions for negative outcomes (Hoza et al., 1993); this has been shown to hold true following both positive and negative social interactions (Hoza, Waschbusch, Pelham, Molina, & Milich, 2000). This may represent a sort of social positive illusory bias, similar to the bias for performance tests documented by Milich (see Milich, 1994 for discussion) in tasks such as puzzles and word searches. In one such study by Milich and Okazaki (1991), boys with and without ADHD were shown a sample, nonsense-word perception puzzle, and then asked to estimate their performance on an upcoming set of puzzles. Performance estimates of boys with ADHD were significantly higher than those of their non-ADHD peers, whereas the actual performance showed an opposite pattern.

Deiner and Milich (1997) found further support for biased social attributions in boys with ADHD and evidence that this is a self-protective mechanism. Following an unstructured cooperative task, boys with ADHD reported an overly positive estimation of how much their non-ADHD partners liked them. Hoza and colleagues (2000) had similar findings in an experimentally structured social interaction between ADHD and non-ADHD participants and a child confederate. In this task, confederates were trained to respond negatively or positively to the participants' attempts to "recruit" new members for a camp; even after negative feedback from the confederate (that was subsequently reinforced by research assistants to enhance salience), ADHD boys rated their degree of success higher than controls. This overly positive, post-task rating is even more

meaningful in that there were no in-task differences on success estimation between the groups, suggesting that perception per se of the negative peer feedback was less impaired than actual interpretation (Hoza et al., 2000).

The protective element of these biased attributions may relate to self-image; when boys in the ADHD group are given positive feedback following a social interaction, self-ratings of social performance actually decrease to more realistic levels (as opposed to a non-diagnosed comparison group in which self-ratings went up following positive feedback; Deiner & Milich, 1997). Similar findings emerged from a study by Ohan and Johnston (2002); after completing a maze task with a research assistant, boys with ADHD who received positive social feedback (i.e., that the research assistant liked him) reported a lower self-rating of social performance, as compared to their initial social performance estimate. It is suggested that positive feedback provides a "real" boost to self-image—presumably negatively affected by a history of social problems—which buffers the impact of a more realistic appraisal of social performance and status. Indeed, it has been shown that children with ADHD do perceive the negative reactions of others (Landau & Moore, 1991), yet these are not necessarily processed in making social attributions. The misinterpretations espoused by this attributional bias may retard the social development of children with ADHD, as this, combined with a possible core deficit of inattention, could lead to infrequent integration of negative social feedback with self-corrective behavior and also a lower motivation for change (Mrug et al., 2001).

Social motivation. Limited empirical findings suggest that children with ADHD could be driven by social motivations that differ from those of other children. Desired affiliations are one measure that taps this construct; Henker and Whalen (1999) note that

children with ADHD, unlike non-diagnosed peers, will express liking for children they have nominated as "causing trouble." However, work by Melnick and Hinshaw (1996) suggests that aggression, not ADHD, could underlie motivational differences. This study investigated the self-nominated and observer-rated goals of high-aggression (HA) ADHD, low-aggression (LA) ADHD, and non-diagnosed boys in an engaging game scenario (i.e., Foosball). Overall, these measures only differentiated the HA group, who nominated the goals of "having fun" and "not avoiding trouble" more and "being fair" less often than the other groups, and were rated by observers as "wanting to play fairly" less and "wanting to show off" more. This could perhaps relate to the higher frequency of dominating and negative social behaviors that have been documented by other investigators (review in Mrug, Hoza, & Gerdes, 2001). Indeed, Saunders and Chambers (1996) observed that children with ADHD may be rejected for less rewarding aspects of their play, such as uncooperative behavior or maladaptive goal setting.

Hoza and colleagues (2000) suggest that the previously noted positive illusory social bias of children with ADHD could contribute to amotivation for social behavioral change. ADHD children may be able to avoid learned helplessness due to overestimation of peer acceptance and liking, yet without interpreting truly negative social feedback as such and then making an internal causal attribution, there is little chance that the child will actively seek to change the behaviors that lead to rejection (Hoza et al., 2000). This may be especially true given that certain peers will perceive the "bold," inappropriate behavior of children with ADHD to be captivating and/or amusing. To the extent that these peers then emit positive responses (e.g., laughter, inclusion), those with ADHD may actually be encouraged to continue deleterious behaviors (Henker & Whalen, 1999).

Emotional regulation. Unmodulated emotional activity has been associated with ADHD and the peer status of children with the disorder. To elaborate, these children tend to reside at the extremes of the affective barometer, with characteristically high levels of emotional expression (Henker & Whalen, 1999). They also often display significant emotional lability (APA, 1994; Barkley, 1996), manifested in over-reactions to minor inconveniences and over-arousal in stimulating situations (Saunders & Chambers, 1996). For example, ADHD children report more frustration and less persistence when challenged by performance tasks (i.e., puzzles), as compared to nondiagnosed peers (Milich & Okazaki, 1991). It is of note, however, that in placebo-controlled methylphenidate trials task persistence of ADHD children has been shown to improve (Milich, Carlson, Pelham & Licht, 1991; Carlson, Pelham, Milich, & Hoza, 1993). Saunders and Chambers (1996) observe that challenge per se is quite likely to be encountered socially by ADHD children, especially given research that shows their behavior evokes more controlling and less appropriate responses from others. They further note that children with ADHD who experience frustration with verbal communication are more likely to emit aggressive social responses.

Hinshaw and Melnick (1995) suggest that the unmodulated emotional responses observed in children with ADHD are often the root of their socially destructive, aggressive behaviors. This hypothesis is consistent with Barkley's (1996) model of ADHD, which posits pathways from behavioral disinhibition to deficits in self-regulation of affect and working memory. This also fits with findings suggesting that negative peer relations of children with ADHD may be more due to a social performance deficit instead of a social knowledge deficit (Erhardt & Hinshaw, 1994; Guevremont and Dumas, 1994;

Wheeler & Carlson, 1994; Saunders & Chambers, 1996; Henker & Whalen, 1999). A child with ADHD may have a less accurate perspective in potentially emotional situations due to an inability to delay affectively-linked responses (e.g., aggression), as well as difficulty in retaining a sequence of related social events in working memory (Barkley, 1996). Add in a generally high level of impulsivity—exhibited by blurting out answers, abruptly changing tasks, and so forth—which may also contribute to low social standing (Saunders & Chambers, 1996), and a major impediment to accurate social situational assessment is realized.

Melnick and Hinshaw (2000) further refined the relationship between ADHD and emotional regulation by comparing responses of non-diagnosed children and two ADHD groups (HA and LA) in a situation in which their goals were blocked. In general, participants in the LA groups (ADHD and non-diagnosed children) exhibited suffient skill in regulating their internal states to problem solve and then enact an appropriate response. Those children in the HA group, however, showed not only a slightly more intense initial emotional response but also a tendency to focus on the thwarting aspects of the situation. It should be noted that this latter group had the lowest mean peer sociometric rank.

Communication skills

The presence of certain core deficits will certainly drive at least some verbal and non-verbal dyadic behavior that is perceived as intrusive (i.e., impulsive), dismissing (i.e., hyperactive), or disinterested (i.e., inattentive). Studies have identified additional elements of poor social communication related to the social dysfunction of children with ADHD. These children tend to display less reciprocal verbal behavior in dyadic

interaction with others, as compared to non-diagnosed peers, which could be related to the measurable difficulty that ADHD children demonstrate when asked to change roles (here, from "speaker" to "listener"; Saunders & Chambers, 1996; Henker & Whalen, 1999). Verbal expression difficulties may originate from deficits in speech internalization (i.e., self-talk) and reconstitution (Barkley, 1996), which are also critical to the organization of interpersonal behavior. It has further been noted that children with ADHD more often initiate conversation at inappropriate times, switch topics abruptly, and fail to follow the course of discussion (Westby & Cutler, 1994; Saunders & Chambers, 1996).

Subtype differences in social functioning

While most of the aforementioned research has either treated ADHD as a unitary construct (i.e., as per DSM-III-R criteria) or only focused on the ADHD-C subtype, there is mounting evidence that peer relations are differentially impaired across the subtypes of ADHD. In a previously described study, Gaub & Carlson (1997a) examined a group of children with ADHD—differentiated into ADHD-C, ADHD-H, and ADHD-IA groups using teacher-reported DSM-IV symptom checklists— drawn from an ethnically diverse sample of school children. When assessed for social impairment using teacher-indicated popularity ratings, 82% of those in the ADHD-C group (n = 51) experienced moderate (+1 *SD*) or greater social impairment, as compared to 59% of the ADHD-IA group and 53% of the ADHD-H group. These results are consistent with research by Sandler and colleagues (1993), who found that both cognitive inattention and hyperactivity independently predicted teacher-reported peer problems, suggesting that this higher level

of impairment in the ADHD-C group may be a product of children having deficits in both symptom clusters. Recent findings, based on teacher reports in a previously described sample (Carlson & Mann, 2002), further suggest that the high SCT/ADHD-IA subgroup experiences a level of social problems intermediate to their low SCT/ADHD IA and ADHD-C peers.

In addition, Maedgen and Carlson (2000) found different patterns of social dysfunction in children in ADHD-C and ADHD-IA groups. Both parents and teachers rated the children with ADHD-C group as displaying more aggressive behaviors in social interactions than did their peers with ADHD-IA and non-diagnosed controls. ADHD-IA group children were nominated as displaying more passive behaviors than the other two groups. Further, the ADHD-C group was observed to show both more positive *and* negative responses to a reward interaction with experimenters than the other two groups, suggesting that emotional dysregulation may be most problematic socially for children with ADHD-C.

Sufficient anecdotal and empirical evidence exists to allow some distinction of social-behavioral archetypes that suffer negative peer relations within the ADHD population. Henker and Whalen (1999) suggest three such heuristic tendencies. The first, "aggressive/assertive" (A/A), is categorized by overt aggression in social situations, often presenting with a comorbid diagnosis of ODD or CD. Substantial evidence exists that validates this particular sociobehavioral type, as aggression in combination with ADHD has been shown to have seriously deleterious effects on peer relations, over and above that of ADHD alone (Landau & Moore, 1991; Erhardt & Hinshaw, 1994; Hinshaw & Melnick, 1995; Kronenberger & Meyer, 2001). The second sociobehavioral type

suggested by Henker and Whalen (1999), "active/maladroit" (A/M), is distinguished by an overactive pursuit of social interaction that, often inadvertently, results in interruption (e.g., barging into a game and suggesting new rules) and frustration (e.g., missing subtle social cues) of peers. The final proposed type, "reluctant/avoidant" (R/A), is markedly different from the A/A and A/M groups, more likely playing a solely observational role in social situations and seeming to neither seek nor enjoy peer interaction. Many of the children falling into this latter group meet criteria for ADHD-IA, and may experience more neglect versus rejection from peers (Henker & Whalen, 1999).

Lifespan Course of Core ADHD Symptoms

Until relatively recently, ADHD was widely believed to be temporally limited to childhood and adolescence (Murphy & Barkley, 1996), and therefore the adult manifestations of ADHD have been relatively neglected in the research literature. In the past decade, however, burgeoning evidence of developmentally persistent ADHD has led to increased research interest and consumer-oriented publications (e.g., Murphy & LeVert, 1995). Investigations have documented, even more so than in children, substantial variance in prevalence of ADHD symptom persistence into adulthood, with estimates ranging from 4% to 60% (Wilens et al., 2002). Using previously cited epidemiological data on childhood ADHD prevalence, this would translate into between 1 and 30 cases of ADHD per 1,000 adults. A study by Dupaul and colleagues—which, admittedly, relied on a self-report instrument to define impairment—suggested that the prevalence amongst U.S. college students is on the high end of that estimate (i.e., 3-4%; Dupaul et al., 2001).

Just as the rate of ADHD symptom persistence into adulthood is somewhat contested, variance exists in estimates of how often ADHD continues into adolescence (Mannuzza & Klein, 1999). However, converging evidence from three longitudinal studies (Gittelman, Mannuzza, Shenker, & Bonagura, 1985; Barkley, Fischer, Edelbrock, & Smallish, 1990; Biederman et al., 1996) suggests that a large majority (68% to 85%) of children with ADHD will continue to suffer impairment as adolescents.

A large factor in the reported prevalence variance has been disparate operationalization of impairment across longitudinal studies of the ADHD populations (Weiss, Hechtman, Milroy, & Perlman, 1985; Mannuzza, Klein, Bessler, Malloy, & La Padula, 1998; Ingram, Hechtman, & Morgenstern, 1999). A recent study, however, has shown that young adult (ages 19 to 25) self-report of ADHD symptoms, upon which many prior studies had based ADHD status, substantially underestimate pathology when compared to parent reports (Barkley, Fischer, Smallish, & Fletcher, 2002). Relatedly, Wender, a pioneer in this area who began treating adults with ADHD symptoms in the 1970s (Mannuzza & Klein, 1999), has suggested that affected adults may underreport symptom frequency and severity as a consequence of lifelong adjustment to the disorder (Wender, 1997). Despite the current non-definitive prevalence rate for adult-persistent ADHD symptoms, it is generally agreed that ADHD is associated with post-childhood maladjustment (ADHD Consensus Group, 2002), and studies have consistently demonstrated that a segment of the ADHD population will continue to exceed DSM diagnostic thresholds in adulthood (Biederman et al., 1996).

A higher level of agreement has emerged regarding the developmental course of symptoms within the HI and IA domains. An ongoing longitudinal study (Biederman,

Faraone, & Mick, 2000) of ADHD children documents a general decrease in ADHD symptoms from early childhood to young adulthood; however, reported symptoms of hyperactivity and impulsivity decrease markedly more than inattention (50% and 45% versus 20%, respectively). In an earlier study, Hart and colleagues observed a similar pattern of HI versus IA symptom resolution over a four-year longitudinal study of amongst boys entering adolescence. Across three age cohorts, HI symptoms showed greater (year 1 mean = 6.8 symptoms, year 4 mean = 5.7) and more consistent declines (independent of stimulant medication use) versus the IA domain (year 1 mean = 4.7 symptoms, year 4 mean = 4.1), in which the smaller decline did not appear to be developmental in nature (Hart, Lahey, Loeber, Applegate, & Frick, 1995). Nolan and colleagues offer further evidence of temporal stability for inattentive symptoms in a school-based, cross-cohort comparison of teacher-rated ADHD symptomatology. Teacher ratings indicated decreasing severity of HI behavior from pre- to elementary to secondary school groups, whereas IA symptoms were rated as consistently severe across ages (Nolan, Gadow, & Sprafkin, 2001). Millstein and colleagues have also noted that ADHD adults (mean age = 37) from a highly comorbid clinical sample indicate a larger lifetime decrease in HI than IA symptoms (15% and 5%, respectively; Millstein, Wilens, Biederman, & Spencer, 1997).

Risk factors for age-persistent ADHD

Researchers have attempted to identify prospective childhood risk factors for ADHD and related impairment that persists into late adolescence and adulthood; unfortunately, the identification of strong predictors has been elusive (Mannuzza & Klein, 1999). Still, several studies have made some headway in this regard. In a four-

year follow-up study of a mixed age (i.e., child or adolescent at start of study), mixed diagnosis (i.e., ADHD or not), medically-referred sample, Biederman and colleagues found that individuals with persistent versus remitted ADHD were more likely to have a family history of ADHD diagnosis, comorbidity (CD/ODD, bipolar, or anxiety) and/or poor school functioning (extra services or special education class) at baseline (Biederman et al., 1996). In the previously mentioned longitudinal study, Hart and colleagues also found that those with persistent and moderately persistent ADHD more frequently had a concurrent CD diagnosis and tended to be younger at initial presentation for clinical evaluation (Hart et al., 1995; Biederman et al., 1996). An analysis of measures from the 8-year longitudinal study by the Barkley group (mean age = 15; Barkley et al, 1990) found that parent reports of ADHD teenage social competence were predicted by higher maternal education and lower paternal antisocial behavior (19% of variance), teacher reports of social maladjustment were predicted by higher family instability (14% of variance), and greater childhood defiance was found to be mildly predictive of diversity of antisocial behavior and number of arrests (5% and 7% of variance, respectively; Fischer, Barkley, Fletcher, & Smallish, 1993).

Outcomes for Adults with ADHD

It is suggested in the preceding section that individuals who continue to experience ADHD-related deficits in late adolescence and adulthood may experience a variety of different impairments depending on their unique clinical presentation. This section will focus on describing the various outcomes of adults with ADHD in more detail, including findings related to neurological, cognitive, educational, occupational, and social domains.

Neurological and cognitive differences in adult ADHD

Research exploring the neuropsychological and cognitive correlates of adult ADHD is limited (Dinn, Robbins, & Harris, 2001; Rapport, Friedman, Tzelepis, & Van Voorhis, 2002). Generally, studies have shown that adults with ADHD demonstrate neuropsychological deficits on tasks sensitive to frontal lobe dysfunction, as compared to non-diagnosed controls (Dinn et al., 2001). Dinn and colleagues (2001) conducted a study building upon Barkley's behavioral inhibition ADHD model (1997) by using neurodiagnostic tasks to examine whether subtypes of ADHD in adulthood (e.g., ADHD-C vs. ADHD-IA) would exhibit different deficits. Adults with ADHD-IA exhibited word fluency and divergent thinking deficits (vs. non-diagnosed controls) which primarily implicate the dorsolateral-prefrontal cortex (DLPF) executive system. Adults with ADHD-C exhibited word fluency (DLPF) deficits and additional dysfunction on Stroop and Go/No-Go tasks, which are associated with orbitofrontal hypoarousal and behavioral disinhibition (Dinn et al., 2001). While these results are intriguing, it should be noted that the sample was small (ADHD-C/-IA $N = 21$) and may be uncharacteristic of the overall adult ADHD population, as mean educational attainment was more than two years of college completed (Dinn et al., 2001).

Investigation of cognitive deficits related to social-emotional competence in adult ADHD is even more sparse. Rapport and colleagues (2002) have initiated research in this domain with a study on affect recognition. In a comparison of an elevated HI symptom (i.e., ADHD-C or –H) and a non-ADHD control group on facial affect recognition tasks (e.g., DANVA; Nowicki & Duke, 1994), ADHD participants exhibited clear deficits in emotional recognition. Importantly, the ADHD group also reported

higher trait emotional intensity than controls (keeping with the behavioral disinhibition model), and a significant negative correlation was found between reported perception of facial cue emotional intensity and accuracy of affect recognition. This latter finding was opposed by a positive correlation between these variables in non-ADHD participants. While their sample has limitations (high mean education, no ADHD-IA), the authors suggest that executive deficits (i.e., emotional lability) undermine the recognition of affect in adults with ADHD, which may play a causal role in interpersonal deficits (Rapport et al., 2002).

Educational outcomes of adults with ADHD

Substantial converging evidence from longitudinal studies indicates that children diagnosed with ADHD will commonly fall short of normative achievement levels in late adolescence and adulthood (ADHD Consensus Group, 2002). Mannuzza and colleagues (Mannuzza, Klein, Bessler, Malloy, & LaPadula, 1993) found that their prospectively followed ADHD participants, at a mean age of 26, had achieved 2.5 fewer years of school than controls; further, only 12% of ADHD probands had completed a bachelor's degree, and 23% of ADHD probands had dropped out of school by the 11th grade (versus 47% and 2% in the control group, respectively. Support emerges from a 16-year longitudinal study showing that 80% of probands with ADHD and/or developmental coordination disorder (DCD) attended fewer than 12 years of school by age 22 (vs. 26% of controls; Rasmussen & Gillberg, 2000).

These studies replicate a pattern of findings from the 15-year follow up in Weiss and colleagues' (1985) study. Additionally, at their 10-year follow-up, 39% of ADHD probands (mean age = 19.5 years) reported having been held back in school due to failing

grades, and 27% had been expelled from school (vs. 13% and 10% of controls, respectively; Weiss, Hechtman, Perlman, Hopkins, & Wener, 1979). Relatedly, at the conclusion of their 8-year longitudinal study, the Barkley group (1990) found that teenage ADHD probands more often reported chronic truancy (21%) than non-diagnosed peers (3%). Rasmussen and Gillberg (2000) have also reported significantly elevated rates of reading/writing disorders in ADHD probands (58%) versus their non-diagnosed comparison group (15%). Cross-sectional studies (e.g., Biederman et al., 1994; Murphy, Barkley, & Bush, 2002) provide additional evidence that adults with ADHD will likely experience academic impairment beyond childhood.

Vocational and occupational impairment of adults with ADHD

As with educational variables, longitudinal studies of ADHD probands have shed light on adult ADHD vocational and other occupational outcomes. In terms of career attainment, such studies show probands as occupying lower status jobs than peers who were not diagnosed with ADHD in childhood (Mannuzza et al., 1993; Mannuzza, Klein, Bessler, Malloy, & Hynes, 1997). However, this outcome has not been consistently reported; Hansen and colleagues reported an equivalent percentage of their ADHD and non-ADHD sample was employed or a full-time student at a 10-year follow up (mean age = 21; Hansen, Weiss, & Last, 1999). Further, the longitudinal study led by Weiss did not find significant mean SES differences between their ADHD and non-ADHD groups, although it should be noted that fewer ADHD than non-ADHD probands were rated in the highest Hollingshead (1975) SES category (3% vs. 17%) and more ADHD than non-ADHD probands fell into the lowest SES category (7% vs. 2%; Weiss et al., 1985).

Collectively, these outcomes from prospective studies suggest that, while unemployment and adult ADHD are not strongly related, adults with persistent ADHD may be "underemployed," or, in other words, realizing relatively lower levels of occupational achievement. This, however, is open to debate, especially given a cross-sectional finding of equal salary between groups of (clinically-referred) adults with and (community-sampled) without ADHD (Barkley, Murphy, & Kwasnik, 1996a). Additionally, it is important to note that many SES indices—including the Hollingshead (1975) system—use educational attainment as one computational factor, which has been shown to be a problematic long-term outcome of ADHD.

One possible explanation for why fewer vocational differences have been noted between adults with ADHD and their non-diagnosed peers is the age of included participants. The previously mentioned studies had an upper mean age of 26 for ADHD groups; is it possible that vocational dysfunction may need more time to emerge? Murphy and Barkley (1996) compared clinically referred groups of adults with and without ADHD (mean age = 32 and 36, respectively). The ADHD group reported, as compared to controls, significantly higher rates of job instability, having been fired from employment, impulsively quitting jobs, and other chronic employment difficulties (Murphy & Barkley, 1996). Importantly, these findings are relative to a *clinical* control group with rates of internalizing psychopathology equivalent to the ADHD group; this control group would be expected to experience vocational difficulties, suggesting the relatively greater dysfunction of this adult ADHD group is substantial. Choice of profession, generally, may also be limited; Wender (1995) anecdotally notes that adult-

persistent IA symptoms (e.g., short attention span) is often reflected by a choice of profession that does not entail frequent sustained attention demands.

Broadly defined, "occupational adjustment" can be considered an index of both vocational and other daily performance tasks that are important for successful, independent living. While few have investigated potential negative long-term outcomes in the latter domain, Barkley and colleagues have examined negative motor vehicle outcomes using a previously described sample (Barkley, Murphy, & Kwasnik, 1996a; Barkley, Murphy, & Kwasnik, 1996b). Relative to non-diagnosed controls, young adults with ADHD showed no deficits in knowledge of driving techniques (as assessed by computer- and videotape-based tasks). However, those in the ADHD group were rated by close acquaintances as having poorer driving skills and self-reported more frequently receiving speeding violations, having their driver's license suspended, and being involved in automobile accidents—including those causing bodily injury (Barkley, Murphy, & Kwasnik, 1996b).

Social outcomes of adults with ADHD

Social adjustment has garnered less interest as an ADHD-related research topic than its antithesis: antisocial behavior. This section will briefly summarize findings on the latter topic before discussing the limited empirical findings on other social outcomes—with an emphasis on peer relations—in the adult ADHD population.

Antisociality. Three of four prospective studies currently in the literature which have followed ADHD children into young adulthood have found that, compared with controls, these individuals have significantly higher prevalences of antisocial personality disorder (APD), non-alcohol substance abuse, and encounters with the criminal justice

system (Weiss et al., 1985, 1979; Mannuzza et al., 1998; Rasmussen & Gillberg, 2000). The fourth study, which included few measures of antisociality, reported a trend of ADHD probands having histories of more frequent trouble with the law (despite having low power due to limited *n*; Hansen et al., 1999). A recent 13-year follow-up study by Barkley and colleagues corroborated these prior findings and further specified that the higher rate of antisociality and encounters with law enforcement is mainly drug-related (versus predatory crimes; Barkley, Fischer, Smallish, & Fletcher, 2004).

Given the previously noted high rate of conduct disorder in ADHD, antisocial behavior in the adult ADHD population is not unexpected. In fact, an intermediate, late adolescent/young adult follow-up of the Mannuzza group's study—which found substantially elevated felony convictions and incarcerations in the ADHD group—found that comorbid CD or APD was a strong mediator of antisocial behaviors (Mannuzza, Klein, Konig, & Giampino, 1989), which also appears to be true of differences noted in the recent study by Murphy and colleagues (2002).

It should also be noted that Barkley and colleagues (1990) found that self-reported cigarette use in the mid-adolescent ADHD group was substantially higher (48%) than for controls (27%), a difference that, again, appeared mediated by CD comorbidity. Subsequent pharmacological studies (Conners et al., 1996; Wilens et al., 1999; Levin, Conners, Silva, Canu, & March, 2001) suggest that the higher rate of cigarette use amongst post-pubescent individuals with ADHD may be a self-medicating strategy, as nicotine administration has been shown to attenuate ADHD symptoms. This seems an especially valid hypothesis for the ADHD subgroup that has CD comorbidity, who, as noted earlier, can manifest particularly severe ADHD symptoms.

Peer and romantic relational outcomes. Very few studies have focused on relational outcomes of late adolescents and adults with ADHD (Barkley, 1990). Of the prospective studies completed to date, only the Weiss group's design included any substantial focus on social relations. At the 10 year follow-up, the young adult (mean age = 20) ADHD group had more unpleasant memories of their childhood, and there was a trend for them to have fewer friends. However, there was no difference between groups with respect to age at first intercourse or virginity status (Weiss et al., 1979). A more fine-tuned analysis compared a subset of participants with ADHD (n = 18) to a like number of controls to examine social skills and self-esteem. Again, the ADHD group indicated a lower self-esteem than controls. Regarding social skills, the adults with ADHD showed deficiencies when asked to orally respond to heterosocial situations. This did not generalize to written responses, lending additional support to the assertion that persistent social problems may be more due to performance rather than knowledge deficits (Hechtman, Weiss, & Perlman, 1980).

Results from the 15 year follow-up revealed persistent ADHD-related problems for probands (mean age = 25; Weiss et al., 1985). The ADHD group more frequently lived with a partner out of wedlock, complained of interpersonal and sexual problems, and scored lower on the socialization scale of the California Psychological Inventory (Self-Report). Finally, their social skills seemed to worsen during young adulthood, as the 15 year follow up revealed deficiencies in heterosocial oral response, situations demanding assertiveness, *and* questionnaires regarding heterosocial, assertiveness-demand, and job interview scenarios (Weiss & Hechtman, 1993). Finally, at both 10 and

15 year follow-ups, probands reported significantly lower self-esteem than controls (Hechtman et al., 1980; Weiss et al., 1985)

Additional research has helped to illustrate this picture of interpersonal dysfunction in adults with ADHD. Biederman and colleagues (1993) found a significantly higher incidence of separation and divorce among adults with ADHD relative to non-diagnosed controls. This is consistent with a trend found for lower marital satisfaction in ADHD probands by Murphy and Barkley (1996). Higher divorce rate with ADHD, however, has not been consistently documented (Mannuzza et al., 1993). Despite this inconsistency, and with the support of research showing significantly higher divorce rates across a range of psychopathology (Kessler, Walters, & Forthofer, 1998), it seems likely that adults with ADHD will experience difficulties with spouses (Wender, 1995) and in other long-term relationships (Ratey, Hallowell, & Miller, 1995).

Disinhibition probably plays a major role in negative social outcomes of adults with ADHD. Barkley (1998) has also reported that adolescent and young adult ADHD probands in an ongoing longitudinal study have tended to have sexual intercourse at an younger age, more lifetime sexual partners, and a greater likelihood of having conceived a pregnancy and/or contracted a sexually transmitted disease. Disinhibition, however, is clearly not the only point of conflict for adults with ADHD who are in romantic relationships. A recent study by Robin and Payson (2002) identified that the most frequently nominated reasons for dissatisfaction in marriages between ADHD and non-ADHD spouses were related to poor task management (e.g., doesn't remember being told things), communication (e.g., says things without thinking), and affect disregulation (e.g., has trouble dealing with frustration). Finally, anecdotal accounts, derived from extensive

clinical experience of Wender (1995) and others (e.g., Ratey, Hallowell, & Miller, 1995), implicate the cognitive impulsivity, inattention, and emotional dysregulation as salient interpersonal hurdles for the adult with ADHD.

A recent study by Canu and Carlson (2003) that focused on the dating experience and related heterosocial competencies of male college students with ADHD-IA and ADHD-C symptoms, as compared to a non-ADHD comparison group, supports and extends previous findings on social outcomes of adults with ADHD. The ADHD-IA group reported a later onset of dating (16 years 3 months) than controls (15 year 4 months) and ADHD-C participants (14 years 7 months). Both ADHD groups scored lower than controls on a social competency measure of assertion, with differences in the ADHD-C group loading more on self-perceived ability to satisfactorily resolve situations demanding assertion, whereas the ADHD-IA group reported a broader, general discomfort with being assertive. Additionally, ADHD-IA participants reported a lower mean dating motivation than other groups. Finally, in a one-minute heterosocial interaction task, men with ADHD-IA, as compared to both other groups, were rated more negatively across several measures by female confederates (e.g., less likely to consider for a dating partner) and third-party raters (e.g., less talkative and assertive) and reported lower desire to continue the interaction, suggesting both immediate discomfort with and negative evaluation by opposite gender social partners and observers (Canu & Carlson, 2003).

Interestingly, CD/ODD comorbidity effects differed substantially between the ADHD groups. Two (ADHD-C vs. ADHD-IA) x 2 (ODD/CD comorbidity vs. non-comorbid) analyses of variance (ANOVA) revealed an interaction where participants in

the ADHD-IA group with childhood CD or ODD were rated significantly lower than their non-comorbid ADHD-IA peers on the speed of sexual initiation in relationships and confederate desire to continue interaction, the exact opposite pattern held true within the ADHD-C group (Canu & Carlson, 2003). However, there were no main effects for comorbidity status alone. This suggests that CD/ODD comorbidity may in fact act as a partial *buffer* for some negative heterosocial outcomes in the ADHD-C subtype, yet within the ADHD-IA group causes further heterosocial alienation.

Communication and language disorders. Communication skills, as suggested by Robin and Payson's (2002) findings, may be an impediment to positive social outcome for the ADHD population. Biederman and colleagues (1993) found that referred adults with ADHD had a higher rate of language disorders (12%) as compared to non-ADHD controls (3%). Further, this same group showed a higher incidence of stuttering (18%) as compared to controls (2%) and referred children with ADHD (4%), suggesting that communication difficulties may increase over the course of the disorder.

Intervention Techniques for ADHD

Many excellent resources detail trends in the field of ADHD intervention (e.g., Hibbs & Jensen, 1996; Barkley, 1998; Kronenberger & Meyer, 2001; Goldstein & Ellison, 2002). The brief summary presented here touches on the "best practices" for treatment of both core ADHD symptoms (HI & IA) and the more specific domain of co-occurring social dysfunction.

Treatments addressing core ADHD symptoms

Established psychopharmacological interventions. The majority of children diagnosed with ADHD in the United States receive psychopharmacological therapy,

which is considered a mainstay of intervention (LeFever, Dawson, & Morrow, 1999; Wilens et al., 2002) and meets the "Well Established" standard set by the APA Division 12 Task Force on Promotion and Dissemination of Psychological Procedures (Chambless et al., 1998). Approximately 90% of those with ADHD prescribed a psychotropic receive one of several stimulant medications (LeFever et al., 1999), most commonly methylphenidate (e.g., Ritalin, Concerta) and less frequently amphetamine (e.g., Adderal) or pemoline (e.g., Cylert), with the latter used very rarely today due to possible liver toxicity (Wilens et al., 2002). Hundreds of randomized, double-blind, placebo-controlled trials have established that 70-80% experience a reduction of cognitive and behavioral ADHD symptoms with an initial stimulant trial, and many non-responders can benefit from an alternate stimulant (Castellanos & Tannock, 2002). Specifically, stimulants have been shown to decrease IA, HI, and aggression, as well as improve memory, classroom behavior, and social interaction (although results are mixed in this last domain, see below; Kronenberger & Meyer, 2001). Finally, while research has concentrated on latency age (6 to 12 year old) children, stimulant medication has proven beneficial for pre-school through adult-aged clients, although some research suggests efficacy may decline with older individuals (Pelham, Vodde-Hamilton, Murphy, Greenstein, & Vallano, 1991; Connor, 2002), as will be discussed further below.

Despite its status as an accepted front-line treatment for ADHD, psychopharmacological intervention is the subject of some popular outcry (Castellanos & Tannock, 2002; Morrow, Morrow, & Haislip, 1998). The controversy regarding medication therapy for ADHD is twofold. First, the most commonly prescribed medications are the psychostimulants methylphenidate (Ritalin) and amphetamine

(Dexadrine, Adderal), which have a potential for abuse and physical dependence (Morrow et al., 1998). While limited published data exists suggesting that caution should be used in prescribing psychostimulants to substance abusing individuals with ADHD (Marsh, Key, & Payne, 2000), no empirical evidence exists linking methylphenidate use in the general ADHD population with later substance abuse. In fact, Biederman and colleagues found that in a 4-year longitudinal study of adolescent boys with ADHD that participants receiving psychostimulants had an 85% *reduction* in risk of developing a substance use disorder, as compared to their unmedicated ADHD peers (Biederman, Wilens, Mick, Spencer, & Faraone, 1999). Second, steep increases in the prescription rate of methylphenidate, in particular, have fueled concerns that ADHD is over-identified and or over-treated (Morrow et al., 1998; LeFever et al., 1999). Indeed, the prescription rate for psychostimulants in select elementary school groups —especially Caucasian males and children who are young for their grade—is two- to twentyfold the accepted incidence in the general population (LeFever et al., 1999; Rowland et al., 2002). It should be noted, however, that in the case of young (6- to 12-year-old) Caucasian males, the lower end of even these estimates are not completely out of line given the male biased ADHD gender ratio described earlier.

Established psychosocial and combined therapies. While the short-term *efficacy* (i.e., observed results in controlled settings) of pharmacotherapy for ADHD has been well established, long-term *effectiveness* (i.e., "real world" results) is still somewhat questionable, perhaps partly due to negative bias that lowers treatment adherence (Pelham, Wheeler, & Chronis, 1998). Regardless, certain difficulties that occur with ADHD can be ameliorated with psychosocial intervention. Two interventions that use a

behavioral paradigm to address ADHD have sufficient empirical support to meet the "Well Established" (Chambless et al., 1998) standard: parent training and classroom management (Pelham et al., 1998). In general, therapists employing these behavioral interventions educate parents and/or teachers regarding the nature of ADHD, train them in contingency management techniques (e.g., time out, contingent attention, point/token reinforcement systems), and provide guidance in tailoring these techniques as they are implemented. Such interventions are typically short term in nature (i.e., 8 to 20 sessions), can be implemented by community-based mental health practitioners, and have been shown to reduce teacher and parent ADHD symptom ratings with moderate to large effects (Cohen, 1992; Pelham et al., 1998; Pfiffner & Barkley, 1998).

Recently, results from the first large-scale, long-term clinical trial of ADHD therapies (i.e., MTA study) have shed light on the effectiveness of medication management (MM), behavioral therapy (BT), a combination of both, and unrestricted community-based intervention for reducing symptoms and impairment of childhood ADHD. Medication (primarily methylphenidate) in the MM group was carefully and individually titrated to an optimal dose; BT was a multi-component program including extensive parent training, classroom intervention, and a summer treatment program (MTA Cooperative Group, 1999). Significant improvement was noted in all 4 groups on teacher, parent, and observer ratings of ADHD behavior and other related difficulties; MM and combined MM/BT were most effective at reducing ADHD symptoms, yet the combination treatment showed objective advantages including higher parent approval (vs. MM; Pelham, 1999), lower effective medication dosage, and greater improvement in non-ADHD domains of functioning (parent-reported ODD/CD behaviors, parent-child

relations, internalizing symptoms, teacher-reported social skills, and reading achievement; MTA Cooperative Group, 1999). Further, while BT alone was no more efficacious than community-based therapy, it should be noted that approximately 70% of the latter group received and were currently taking psychotropic medication at the time of final assessment, whereas the BT treatment had finished several months prior (Pelham, 1999). All in all, the MTA results confirm that both medication and behavior therapy for ADHD can be effective in the long run and that a combination of the two may be optimal.

Treatment for negative peer relations

In general, negative peer social status has proven to be very resistant to treatment across varying groups of rejected children (Pelham & Hoza, 1996; Gresham, Sugai, & Horner, 2001). Evidence suggests that empirically supported therapies that address core ADHD symptoms, such as methylphenidate (Pelham et al., 1991; DuPaul, Anastopoulos, Kwasnik, Barkley, & McMurray, 1996) and behavior therapy (Mrug et al., 2001), have only very limited impact on the negative social status of children with ADHD. Although positive social changes (e.g., methylphenidate's reduction of socially destructive, off-task behaviors) are sometimes realized with these interventions, they do not nearly restore the peer status of ADHD children to the normal range (Mrug et al., 2001). While the combination of BT and pharmacological intervention seems to hold promise in addressing non-core impairment (see above; MTA Cooperative Group, 1999), the hurdle of collecting empirical data on peer social outcome after such an intervention remains.

Given that medication and behavior therapy were not specifically designed to address social dysfunction, perhaps the minimal improvement realized in this particular domain can be reframed as "tolerable." More discouraging, however, are the empirical

findings on the efficacy of social skills training (SST) for ADHD children, a widely used intervention for peer problems (Mrug et al., 2001). SST is typically conducted in a group format (i.e., therapist(s) with several peer-rejected children) and includes multiple components, notably direct instruction on positive social behaviors and communication along with in-session practice opportunities (Mrug et al., 2001). Several meta-analyses have been conducted on the general efficacy of SST for high-incidence childhood disabilities (including ADHD), the most comprehensive of which has revealed just a .2 effect size (versus wait list controls) across interventions an average 30 hours in length (Gresham et al., 2001). Unfortunately, the efficacy of SST within the specific ADHD population appears to follow—or even fall short of—this general finding (Guevremont & Dumas, 1994).

Perhaps the most salient explanation for the general failure of SST to ameliorate peer rejection is a general lack of attention to which relational deficits should be targeted for specific clinical populations (Gresham et al., 2001). Relatedly, as noted above, many researchers believe the social deficits of children with ADHD to be more performance- vs. knowledge-mediated; in other words, these children already possess the indicated skills for successful interaction but have difficulty producing these in settings with peers (Landau, Milich, & Diener, 1998). Traditional SST, therefore, may only be providing very limited, coached practice opportunies in an ecologically problematic setting (i.e., clinic). Indeed, even when gains are realized using a SST paradigm, the generalization and maintenance of results have been problematic (Gresham et al., 2001).

Findings emerging from innovative treatment designs show great promise for addressing the peer relational dysunction of children with ADHD. Cousins and Weiss

(1993) and Pfiffner and colleagues (Pfiffner, Calzada, & McBurnett, 2000) have advocated including a concurrent parent training component with SST interventions specifically tailored to the ADHD population. Such an approach builds in the well-established BT methodologies (see above) to reduce aggressive and inappropriate behavior with peers—the strongest predictor of peer rejection related to ADHD (Hinshaw, 1991) that is highly relevant to the ADHD-C group—and builds a parent-child team for support and reinforcement of learned skills with peers. Frankel and colleagues (1997) have implemented such a design with ADHD children, both with and without ODD comorbidity. After 12 concurrent parent and child sessions emphasizing conversational, group entry, confrontation, and related peer skills, participants exhibited substantial gains (large effect sizes) on *teacher* ratings of likability, aggression, self-control, and assertion (Frankel, Myatt, Cantwell, & Feinberg, 1997). Similar results were reported from a similar 8-session design utilized by Pfiffner and McBurnett (1997). Although lacking in peer sociometric data, these findings represent a substantial contribution toward SST efficacy and generalization.

Another treatment that employs a more intensive approach and is especially promising due to its ecologically-valid design is the summer treatment program (STP; Pelham & Hoza, 1996). An eight-week program with day-long programming for children with ADHD (including ODD or CD comorbidities), the STP frames activities (e.g., sports, crafts, academic enrichment/remediation coursework) within an elaborate behavioral management system. Several peer interventions are employed, including SST and cognitive interventions such as problem solving and anger management, and parents attended weekly parent training sessions. In addition, participants were paired as

"buddies" and were reinforced for friendship behaviors (Mrug et al., 2001). Across three summer programs from 1990 to 1992, substantial reductions in ADHD, ODD, and CD behaviors (24%, 28%, and 35% decreases, respectively) were realized; importantly, parent-ratings indicated that 84% of participants were at least "somewhat improved" in social skills (Pelham & Hoza, 1996).

The STP results (Pelham & Hoza, 1996) are certainly encouraging. Further, the inclusion of the "buddy system" targets development of friendship, a dyadic, mutual relationship that is a separate outcome versus peer acceptance/rejection. Mrug and colleagues (2001) review the potential benefits of friendships, including practice of interpersonal skills, emotional support, personal validation, and enhanced self-esteem; in short, friendships may serve as a buffer against the negative effects of rejection by the larger peer group. They further note that little is known about the actual friendships of children with ADHD, and that focusing on improving these friendships may be a more viable alternative to directly addressing peer group rejection. Indeed, in a reformulation of the intervention described above, Frankel and Myatt (2003) have emphasized the formulation of friendships as a critically important outcome of SST intervention for children with ADHD. This represents a promising and exciting direction of investigation to address the negative social outcomes—and related long-term maladjustment—of this disorder, especially given suggestive data for friendlessness being fairly common (30%) for older children with ADHD (Mannuzza & Klein, 1999).

Treatment for adults with ADHD

While volumes that reference psychosocial and pharmacological interventions for adulthood ADHD have been available for several years (e.g., Nadeau, 1995; Wender,

1995), relatively few empirical studies have been conducted on treatment outcome, and these are limited to pharmacological interventions. Several controlled studies of methylphenidate in adult populations have yielded reduced core ADHD symptoms and increased general functioning of probands, as compared to placebo (Wilens et al., 2002); the average rate of treatment response appears lower (54%) in this older group (Spencer et al., 1996), although employing a higher dosing protocol brings the response rate up (74%), in line with results in child samples (Faraone et al., 2000). Treatment outcome research using other medications in adult populations strengthens the case for pharmacotherapy. Adderall (a mixed amphetamine compound; Spencer et al., 2001), desipramine (a tricyclic antidepressant; Spencer et al., 1996; Faraone et al., 2000), and buproprion (a monoamine oxidase inhibitor antidepressant; Spencer et al., 1996) have all yielded satisfactory response rates (near 70%) as measured by ADHD rating scales in placebo-controlled studies. A limitation of this growing body of research is the short-term nature of the existent studies and a general lack of attention to actual improvements in adjustment versus core ADHD symptom reduction.

As previously discussed, Pelham and colleagues (1998) note that the empirically well supported psychosocial treatments for ADHD are limited to parent training and classroom interventions. Given the obvious developmental differences between adults and children with ADHD (i.e., likely not living at home, attending school), it seems clear that these interventions would not be relevant for or generalize to most adult clientele. This underscores the great need to develop and empirically evaluate psychosocial interventions that can address the adaptive difficulties of adults with persistent ADHD symptoms.

Selected Factors in Relationship Quality of Adults

Decades of research in the social psychology domain have informed our knowledge of relational processes at various levels (e.g., group, dyadic, and intrapersonal). Few of the concepts emerging from this body of work have been utilized for research in the ADHD population. This lack of cross-disciplinary investigation is unfortunate, as many uninvestigated cognitive constructs and mechanisms exist which could potentially illuminate the peer relations difficulties seen in many children with ADHD, as well as an emerging pattern of problematic romantic relationships for at least some adults within this group. Several such sociocognitive constructs that could have a bearing on this topic will be briefly reviewed, followed by a more substantive discussion of rejection sensitivity and self-monitoring, upon which this investigation will focus.

Styles of love

The motivations of romantic partners (i.e., what they desire) can play a pivotal role in how satisfied they are within that relationship. Several theorists have suggested models for these "styles of love," including Lee (6-style model; 1973) and Sternberg (intimacy-passion-commitment model; 1986). Hendrick and Hendrick (1997) review evidence suggesting that two meta-styles, passionate (i.e., sexual, romantic) and companionate (i.e., supportive, committed) love, account for a substantial amount of variance in the satisfaction of romantic couples. The authors also note the importance of incorporating behaviors from both stylistic preferences for satisfaction in long-term relationships. Barnes and Sternberg (1997) review a series of studies that, overall, confirm the presence of these meta-styles and identify subcomponents of each

(*passionate*: sexuality, intimacy, mutual need; *companionate*: trust, sincerity, mutual understanding, fulfillment, and compatibility) that positively relate to dyadic satisfaction.

Self and partner appraisals

How one views oneself and social partners contributes to behavior in and satisfaction with interpersonal relationships. Kruger and Dunning (1999) conducted an insightful series of studies that examined the relationship between low domain-specific ability and accuracy of self-appraisal in that domain. Across measures of humor, grammar, and logic, college students who scored in the bottom quartile of performance rated themselves as above average in ability. After providing a logic tutorial to participants, those in this low-ability group showed the greatest improvement in accuracy of self-appraisal. Kruger and Dunning contend that a minimal level of competence in any given domain may be necessary in order to achieve accurate self-appraisal. It could be that those with sub-minimal social skills overestimate their ability, although this has not yet been empirically tested. In fact, several previously noted studies (Diener & Milich, 1997; Hoza et al., 2000) suggest that this is the case with many in the ADHD population, as do more recently reported discrepancies between the social self-appraisal of children with ADHD and teacher reported social acceptance ratings (Hoza, Pelham, Dobbs, Owens, & Pillow, 2002).

Independent researchers have established that self-esteem is associated with duration and satisfaction of romantic relationships in adulthood (review in Murray, Holmes, MacDonald & Ellsworth, 1998). Murray and Holmes have extended this line of research, linking both self-doubt (Murray et al., 1998; Murray, Holmes, Griffin, Bellavia,

& Rose, 2001) and, interestingly, positive illusions of one's partner (Murray & Holmes, 1997; Murray & Holmes, 1999; Murray, Holmes, Dolderman, & Griffin, 2000) to relational outcomes, where self-doubt has a contaminating effect on partner and relational perception and positive illusions serve as a buffer during relational conflict.

Attraction: Self-verification and self-enhancement

Individuals differ on what they look for in a romantic partner. One factor in the choice of a mate (or date) is related to the underlying motivation of the relationship seeker: what sort of personal feedback is the target looking for? Swann (1983) suggested that individuals are attracted to those who see them as they see themselves; in other words, that we are motivated by self-verification (SV) in interpersonal relations. This is in contrast to a self-enhancement (SE) motivation, in which only positive feedback is sought, regardless of perceived truthfulness (Condon & Crano, 1988; Katz & Beach, 2000). Both SV and SE feedback have been shown to be influential, albeit in different ways. When people are presented with feedback, they tend to cognitively appraise the accuracy (SV) of the information while affectively reacting to the valence of the message (SE; Swann, Griffin, Predmore, & Gaines, 1987). However, it appears that when someone actually seeks feedback on a self-perceived *negative* attribute that SV feedback is preferred (Swann, Pelham, & Krull, 1989). Katz and Beach (2000) studied preferences for SV and SE feedback from potential dating partners in college students; in general, a combination of SV and SE was preferred, yet SV alone was preferred over SE alone. The authors suggest that overly positive prospective dates may fare more poorly, and that

certain dispositions (e.g., low self-esteem) may cause certain individuals to prefer SV to SE feedback.

Personality characteristics

In general, similarity of personality has been shown to be a potent predictor of initial attraction (Santee & Jackson, 1978). Specific personality characteristics, however, have also been associated with success, satisfaction, and other relevant outcomes in social and romantic relations. The trait of neuroticism has been most consistently linked (negatively so) with relationship outcomes (Bouchard, Lussier, & Sabourin, 1999). Additionally, Melchior and Cheek (1990) showed that those who initially self-report as shy later report spending more time focused on themselves and having more anxious thoughts during a conversation with another study participant. The authors contend that these reactions likely impair effective planning and responses in social situations.

Bouchard and colleagues (1999) recently investigated how both target and partner Big Five personality traits (Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness) related to relational satisfaction in a large sample of cohabitating heterosexual couples (mean age: men = 37; women = 34). Individual level of neuroticism explained a significant amount of variance on relational satisfaction in both women (16%) and men (6%); however, other traits added explanatory power in subsequent hierarchical analyses. A total of 20% of the variance for women's relational satisfaction was reached, with self-rated of agreeableness and partner ratings of neuroticism and openness making unique explanatory contributions. For men, a total of 16% of the variance in relational satisfaction was explained, with self-rated openness,

agreeableness, and conscientiousness and partner ratings of neuroticism making unique contributions. There is evidence, however, that personality factors in initial attraction are not completely overlapping with those central to relational satisfaction. For example, Speed and Gangestad (1997) found that some aspects of extraversion (e.g., outgoingness) were associated with romantic popularity (i.e., frequency of dates) of heterosexual college men, whereas extraversion was not associated with the relational satisfaction of either cohabitating partner in the study by Bouchard and colleagues (1999).

A fairly recent addition to the individual differences literature is Swann and Rentfrow's (2001) "blirtatiousness" measure, the *Brief Loquaciousness and Interpersonal Responsiveness Test* (BLIRT). Blirtatiousness is described as the tendency for rapid, effusive verbal response in interpersonal situations. High blirtatiousness has been shown in college students to predict greater length and number of conversational responses, and lower response latency (Swann & Rentfrow, 2001). Blirtatiousness has also been shown to directly effect observer attributions of likability and competence; however, "blirting" tends to amplify the expression of other personality characteristics, so that, over time, negative qualities (e.g., poor academic performance) become more salient to observers and could impact their opinion (Swann & Rentfrow, 2001). Given the generally high level of impulsivity in the ADHD-C subtype and previously noted findings of Canu and Carlson (2003)—particularly regarding low verbosity by male college students with ADHD-IA in a conversation initiation task—it is possible that the ADHD subtypes are distinguished by level of blirtatiousness.

Models from early experience

Bowlby's (1969) seminal attachment theory posits that the emotional availability and responsiveness of early caregivers leads to children's development of internal models of both self (i.e., how deserving of care and attention one is) and significant others (i.e., how trustworthy and caring they are). These internal models are reflected by "attachment style"—characteristic patterns of parent-child behavior (e.g., secure, anxious/avoidant, anxious/ambivalent; Ainsworth, Blehar, Waters, & Wall, 1978)—which then influences reactions, behavior, and expectations in subsequent social relationships (Bowlby, 1973).

Recent research has investigated how attachment style is manifested and effects romantic relationships in adulthood. Adult attachment (defined in varying ways) has been associated with self- (Kirkpatrick & Davis, 1994) and partner-rated (Collins & Read, 1990) satisfaction, yet is less predictive of longitudinal relationship stability (Kirkpatrick & Davis, 1994). Further, Scharfe and Bartholomew (1995) found that attachment security is positively associated with constructive accommodation (i.e., response to partner in confrontation situations) and negatively so with destructive accommodation, independent of relationship satisfaction.

Several authors have suggested that ADHD is associated with insecure attachment based on theoretical (Erdman, 1998; Ladnier & Massanari, 2000) and anecdotal (Stiefel, 1997) information. Few empirical studies have examined the relationship of ADHD and attachment. Jacobvitz and Sroufe (1987) found that early overstimulating and intrusive care by mothers predicted hyperactivity in kindergarten. However, the parenting behaviors, themselves, are similar in description to ADHD symptoms; it could be that maternal ADHD (not assessed) was present and genetic transmission better explains the

results. Clarke and colleagues' (Clarke, Ungerer, Chahoud, Johnson, & Stiefel, 2002) recent cross-sectional study compared a small (n = 19) sample of latency age ADHD boys to nondiagnosed controls and found that an interview measure and a drawing measure of attachment differentiated the groups after parsing out ODD. Unfortunately, more than 20% of the ADHD sample also had a separation anxiety diagnosis (clearly relevant to attachment measures), which was not controlled for. Other existent, empirical work focusing on attachment in ADHD populations includes an unpublished dissertation and an edited book chapter, which seem to collectively relate insecure attachment to more to oppositional and delinquent behavior than actual ADHD status (Allen, 2001; Gomez & Gomez, 2002). Altogether, the relationship between ADHD and attachment should be considered, at best, speculative given the overall paucity of supportive empirical data.

Bryant and Conger have proposed a more complex model for the development of early adult romantic relationships (DEARR; Bryant & Conger, 2002). In this model, family of origin characteristics (valence of behavioral interactions and relationship attributions, level of neuroticism, SES, and demographic stability) contribute via two pathways to the attributes of young adult relationships (and their ultimate success). Using a longitudinal design with family and target child measures at 7th grade and follow-up at young adulthood (mean age = 21), Conger and colleagues found that parental socialization (i.e., nurturant-involved parenting at 7th grade) predicted affective behaviors of the target toward his or her romantic partner, which in turn was related to relationship quality (Conger, Cui, Bryant, & Elder, 2000).

Targeted Mechanisms for Investigation: Rejection Sensitivity and Self-monitoring

Clearly, an abundance of variables can impact adult social adjustment. In light of the features of ADHD that have been reviewed, two that seem of particular relevance are rejection sensitivity (RS) and self-monitoring (SM). First, RS is a construct that, like attachment and the DEARR model, explicitly relates early experience of rejection to later cognitive schemas that drive social interpretations and behaviors. However, RS theorists have more fully embraced the importance of *peer* rejection in individual differences, which commonly co-occurs with childhood ADHD. Further, the basic construct of RS includes a component similar to the disinhibition and emotional overreactivity seen in ADHD-C. Additionally, SM is by nature an attentional construct; individuals with high SM must effectively alternate their focus of attention between social cues, internal attributions, and modulating their own behavior according to those attributions. Given the core dysfunction of attention, it is inherently interesting to explore the relationship between ADHD and SM. Finally, a main focus of the current investigation is to further elucidate the pattern of dating relationships of adults with ADHD; SM has been shown to relate to the quality of relationships, partner preferences, motivation, and tactics in this domain. Findings related to these and other relevant features of RS and SM are elaborated below.

Rejection sensitivity: Interpretation in relationships

Rejection sensitivity (RS) has been described and validated in both child (Downey, Lebolt, Rincon, & Freitas, 1998) and adult samples (Downey, Khouri, & Feldman, 1997) as a tendency "to anxiously or angrily expect, readily perceive, and overreact to rejection" (Downey et al., 1997, p. 85) that evolves from chronic

interpersonal rejection in early childhood (via parent and/or peer relationships). Researchers have suggested that rejection sensitivity may drive the cognitive-affective processes illustrated by Dodge (1980), in which the attribution of hostile intent to ambiguous social responses was associated with children's aggression (Downey et al., 1997). Indeed, children high on a measure of angry expectation of rejection exhibited more negative mood than controls after a non-rejecting mild disappointment (Downey et al., 1998). Further, at a 1-year follow-up, the children with high RS, as compared to controls, had experienced more conflict with school personnel and same-sex peers, absences and suspensions from school, were rated lower in social competence by teachers, and had lower grades (Downey et al., 1998).

There are two expected pathways for the general social behavior of high-RS individuals. Those with a "low investment" style may withdraw from any non-essential social interaction; this is perceived as a protective maneuver, reducing the overall chances of rejection and pain. Contrastingly, people high in RS with a "high investment" style may go to the other extreme, becoming socially preoccupied; the high-RS individual here invests heavily in securing intimacy, believing that a high level of commitment will buffer against rejection (Downey et al., 1997).

Influenced by interpersonal theorists such as Bowlby (1969, 1973), Downey and colleagues have developed a line of research investigating the social-behavioral manifestation of rejection sensitivity in adulthood. Rejection sensitivity, in general, is operationalized in adulthood as strictly the anxious expectation of rejection, as angry expectations of rejection have primarily been seen in child and adolescent samples (Levy,

Ayduk, & Downey, 2001). Downey and Feldman (1996) hypothesize that adults high in (anxious) RS will perceive intentional rejection in ambiguous behavior of a romantic partner, respond to this perceived rejection with jealousy, controlling behaviors, and/or diminished support, and perceive lower levels of security and happiness in romantic relationships. In a series of studies using college student samples, adults with high (i.e., above population mean) RS felt more rejected after an ambiguous social response from an opposite-sex confederate, and reported elevated feelings of relationship insecurity/dissatisfaction and concern of rejection by romantic partners (independent of actual commitment of partner; Downey & Feldman, 1996). RS independently contributed to attributions of hurtful intent regarding the romantic partner's behavior, beyond the explanatory power of several other relevant variables (e.g., neuroticism, self-esteem, attachment). Further, high RS in participants predicted lower relationship satisfaction in their partners, mediated by gender-differentiated maladaptive responses of participants (e.g., males: jealous behavior; females: hostile behavior).

Other studies by the Downey group have extended these initial findings. High RS has been shown to predict termination of adult romantic relationships (after one year), and male partners of high RS women report more frequent thoughts of ending the relationship after relational conflicts, perhaps due to the higher observed anger displayed by these women (Downey, Freitas, Michaelis, & Khouri, 1998). Purdie and Downey (2000) investigated the role of RS in the romantic relationships of adolescent (middle-school) girls using a 1-year longitudinal design. Initial RS was related to conflict and perceived insecurity in romantic relationships; high RS girls also more frequently

endorsed a willingness to do things known to be wrong to maintain their romantic relationships, as compared to low RS girls (Purdie & Downey, 2000).

The relational behavior of those with high RS may be moderated by other factors, such as social-behavioral style (see prior discussion of Downey et al., 1997). In an interesting cross-sectional study examining the role of RS in dating violence, Downey and colleagues (2000) found that the behaviors of high RS male college students varied according to their self-reports of high or low personal investment in romantic relationships. Those in the high RS, high investment group were most likely to report aggression against their partners; the high RS, low investment group had smaller friendship networks, higher distress and avoidance in social situations, and were less likely to be involved in serious romantic relationships (Downey, Feldman, & Ayduk, 2000). These results generally support the dual-pathway social coping model for high RS individuals (Downey et al., 1997). Aggression is more likely from high RS, high investment men because their coping style pushes them into close relationships in which their ready perception of rejection is likely to lead to feelings of betrayal. However, the authors suggest that high RS, low investment men who *do* enter serious dating relationships may be even more prone to aggression against their partner than high RS, high investment men, as for the former group perceived rejection is likely to be that much more distressing given the initial hurdle they had to overcome (Downey et al., 2000).

An investigation led by Ayduk explored how cognitive inhibition ability—specifically, delay of gratification (DG)—effects outcomes of high RS individuals, testing the theory that DG could buffer those high in RS against negative outcomes by

delaying and reducing immediate, maladaptive social responses to perceived rejection (Ayduk et al., 2000). Within a high RS, young adult group, DG was positively associated with self-esteem and ability to cope with stress, and negatively associated with cocaine-crack use. DG was also positively associated with self-worth and interpersonal functioning in a group of high RS early adolescents. The authors speculate that strategic deployment of attention (i.e., DG) may allow those high in RS to refocus on non-rejection and other environmental cues when needed, dampening the effect of rejection vigilance (Ayduk et al., 2000).

Relevance to ADHD. As mentioned previously, the high likelihood of peer rejection (Erhardt & Hinshaw, 1994; Barkley, 1998) and the core features of disinhibition and emotional disregulation (APA, 1994; Barkley, 1996) associated with ADHD indicate the likelihood that ADHD children may develop higher RS, as compared to their non-diagnosed peers. To the degree that RS represents a schema for interpersonal response, high RS may continue into adulthood with persistent ADHD. Further, the neurological nature of frontal lobe dysfunction in children (Swanson et al., 1998; Shaywitz et al., 1999; Wilens et al., 2002) and adults (Dinn et al., 2001) with ADHD makes it especially likely that underlying characteristics that could contribute to RS will remain stable.

RS may be exacerbated by the negative social predictions that individuals with ADHD demonstrate in childhood (Zentall et al., 2001). Deficits in working memory (Barkley, 1996) may further contribute to ADHD individuals perception of negative feedback from social partners (note exceptions in Landau & Moore, 1991; Hoza et al., 2000). When this is all combined with a tendency to overreact to minor frustrations

(Saunders & Chambers, 1996) and an emotionally intense and aggressive response style in childhood (Hinshaw & Melnick, 1995; Maedgen & Carlson, 2000) and adulthood (Rapport et al., 2002; Robin & Payson, 2002), it seems quite possible that RS is a factor that relates to the adjustment of ADHD individuals in romantic relationships.

Self-monitoring: Awareness and attention in relationships

Symbolic interactionist theory (e.g., Mead, 1934) posits that interpersonal encounters heighten sensitivity to social feedback, which in turn leads to self-awareness (Ellis & Holmes, 1982). However, the degree to which one focuses on a conversation partner as an indicator of one's own performance varies. Ellis and Holmes (1982) systematically varied attentional focus (self vs. confederate) of participants in an experimental job interview setting, with a confederate playing the "interviewer" role and responding either warmly or coldly over the course of the interaction. Undergraduates who focused their attention on the confederate (versus themselves) were more prone to interpret change in the interviewer's behavior (e.g., changing from neutral to warm) as social feedback; for example, in the neutral-then-cold interviewer condition, self-focus did not lead to negative self-appraisal whereas partner-focus did (Ellis & Holmes, 1982).

The related psychological construct of self-monitoring (SM) differentiates the segment of the human population that tends to be particularly responsive to environmental and interpersonal cues with regard to their social behavior (high SM) from others who behave more consistently across social situations and contexts (low SM; Snyder & Simpson, 1984). High SM implies, then, both an "other" attentional focus in relationships as well as an ability (and motivation) to modify responses given perceived

self-related social feedback. Several researchers have investigated the impact of self-monitoring on peer (Snyder, Gangestad, & Simpson, 1983) and, more germane to the study proposed here, romantic relationships.

Snyder and Simpson (1984) conducted an initial exploration of the dating style of those high and low in SM in a series of four studies. Findings indicated that undergraduate men and women in a high SM group—as compared to a low SM group—were more willing to breach or terminate current dating relationships to date a situationally more desirable partner (e.g., for a tennis date, an opposite-sex friend skilled at tennis vs. current dating partner with low tennis skill), and reported having more partners during periods of open (vs. exclusive) dating. Further, when high SM participants did report being in exclusive dating relationships, they were characterized by shorter duration and lower self-reported relational intimacy after six months, as compared to those of the low SM group (see exception in an Asian sample, Goodwin & Soon, 2001). Findings from a subsequent study suggest that high SM adults place more importance on the physical attractiveness of potential dating partners, versus the focus on dispositional attributes of low SM peers, in the initiation of dating relationships (Snyder, Berscheid, & Glick, 1985). On the whole, this pattern of results suggest that those high in SM adopt a more uncommitted orientation to dating than that of their low SM peers (Snyder & Simpson, 1984) and that novelty may partly motivate the commitments of high SM daters.

In fact, there may be more fundamental motivational differences in the dating behavior of individuals with different levels of SM. Rempel and colleagues (Rempel,

Holmes, & Zanna, 1985) identified three motivational styles in romantic relationships: extrinsic (i.e., date to achieve status), instrumental (i.e., date to fulfill needs such as sex, support), and intrinsic (i.e., date for satisfaction of companionship). Jones (1993) found, among heterosexual undergraduates currently in dating relationships, that SM is positively associated with extrinsic and negatively associated with intrinsic motivations. Further, supporting the findings of Snyder and colleagues (1985), undergraduates in a high SM group indicated a preference for attributes associated with external motivation (e.g., sex appeal, physical attractiveness, social status, financial resources, etc.) whereas those low in SM preferred attributes associated with an internal motivation for dating (e.g., honesty, similarity, loyalty, kindness, responsibility; Jones, 1993).

How does SM effect heterosocial perception? SM may not only influence the eventual choices of and behavior with romantic partners, but also the way individuals view others of the opposite (or, more generally, the romantically-preferred) sex in everyday interactions. An investigation led by Harnish (Harnish, Abbey, & DeBono, 1990) addresses this question. After an experimental heterosocial interaction task (i.e., discussing likes and dislikes of college life), opposite-gender conversation partners were asked to rate themselves and each other on traits of sexuality and likability. Participants in a high SM group rated themselves as being more flirtatious and seductive and their partners as being more likeable, as compared to low SM raters (Harnish et al, 1990). It appears as if the high SM group initially makes a more positive evaluation of opposite gendered conversation partners (likely based on external appearances; Snyder et al., 1985), which, coupled with flirtatious, seductive behavior, may maximize perceived

opportunities for sex and, therefore, temptation to engage with prospective romantic partners (Harnish et al., 1990).

Another measure of motivation is willingness to use certain tactics in securing a date. Deception is a tactic that could facilitate short-term success in dating (i.e., initiation). Rowatt and colleagues (Rowatt, Cunningham, & Druen, 1998) note research associating high SM with deceptive self-presentation, such as modifying their interpersonal expressiveness (Lippa, 1976), speech pacing (Siegman & Reynolds, 1984), nonverbal behavior (Simpson, Gangestad, & Biek, 1993), and seeking out information about target partners in order to fabricate a successful self-presentation (Elliot, 1979). Rowatt and colleagues investigated how willing high and low SM male undergraduates are to employ deception in dating initiation attempts, and what sorts of deception they would employ (Rowatt, Cunningham, & Druen, 1998). Findings from two studies employing a realistic experimental "dating service" design, high SM men reported greater acceptability for and demonstrated higher rates of deception in dating initiation attempts, as compared to their low SM peers. Further, the nature of their deception was subtle, consisting primarily of a self-presented personality more congruent to a desired partner. The authors contend that the deception of high SM men requires a certain degree of skill for attending to and matching self-presentation to a partner (Rowatt et al., 1998).

Relevance to ADHD. While, as noted above, SM is a construct that is largely related to attention (i.e., alternating between other- and self-focus), it also seems to be associated with social impulsivity. Those high in SM exhibit more "relational restlessness" through their uncommitted orientation (Synder & Simpson, 1984). This

coincides with findings of higher separation and divorce in marital unions (Biederman et al., 1993; Kessler et al., 1998) and a higher number of sexual partners (Barkley, 1998) in ADHD groups. Further, the willingness of high SM individuals to use deception in dating initiation (Rowatt et al., 1998) may be indicative of a higher overall motivation to date. Relatedly, Canu and Carlson (2003) found that college-age males with ADHD-C had a higher motivation for dating than peers with ADHD-IA. Relatedly, it has also been noted that children with ADHD-C are more motivated to impress others than peers with ADHD-IA (Carlson et al., 2002).

Ample evidence exists, however, to suggest that ADHD individuals may generally be unable to successfully self-monitor and, therefore, will exhibit less SM than undiagnosed peers. Researchers have shown that ADHD children have difficulties in accurate perception of social cues (Henker & Whalen, 1999) and paying attention to relevant versus salient yet irrelevant cues (Zentall et al., 2001). Further, the likely difficulties in alerting (Swanson et al., 1998) and emotional recognition (Rapport et al., 2002) may also impair successful interpretation of even salient social cues, effectively bypassing any partner-matching process for ADHD individuals. Rowatt and colleagues (2002) have found that deficits in emotional recognition are related to adult persistent ADHD, which supports the idea that adult probands will continue to face hurdles for SM.

Summary and Rationale for the Study

As is evident from the literature reviewed above, ADHD is a heterogenous, relatively prevalent disorder that is largely biological in nature, originates in childhood, and is broadly characterized by motor excesses, disinhibition, and inattention. Contrary

to initial suppositions, ADHD has shown to persist into adolescence and adulthood for a substantial number of those afflicted. The behavioral and cognitive dysfunction associated with the disorder cause impairment in several domains, including peer relations. While established therapies are quite effective at reducing the core symptoms of ADHD, these have not proven effective at normalizing social status. While promising new therapeutic techniques have been developed, a more complete understanding of possible factors involved in social dysfunction is still needed. A relative paucity of research in the adult population makes this especially true for this age group, particularly given that very scant, empirical evidence exists regarding how the cognitive and behavioral characteristics of ADHD affect their relational interactions. Furthermore, the potential that different mechanisms contribute to the negative social status in ADHD subtypes is virtually unexplored.

RS and SM are highly relevant to behavior and success in the domain of social—and, particularly, romantic—relationships; both are cognitive mechanisms, developing according to individual experience and preference, that have an impact on social interaction into adulthood. Given that marital and/or dating dysfunction is far from uncommon in adults with ADHD, it is believed that an understanding of how ADHD, RS, and SM interact could help provide more solid theoretical guidance for researchers and clinicians to design appealing, effective interventions addressing relational deficits in the ADHD population. Building on existent child- and adulthood ADHD literature, the current study will further illustrate the heterosocial outcome of young adult males presenting with symptoms of ADHD-C and ADHD-IA by contrasting the patterns of RS

and SM in these ADHD subtypes with that of non-diagnosed control group. Finally, to the author's knowledge, this represents the first examination of these constructs in the ADHD population; potentially, results of the study could shed light on the nature of ADHD and the generalizability of RS and SM research to clinical samples.

Hypotheses

As stated above, the core aim of the study is to explore the nature of how subtypes of ADHD, RS, and SM coexist and relate to outcomes in the domain of romantic relationships in adulthood. However, given the overall paucity of data on the social outcomes of adults with ADHD, data on selected other variables will be collected, including romantic relationship history (e.g., number of partners, length of relationships), self-reported degree of investment in romantic relationships, timing of first dating and sexual experiences, qualities of current friendship networks, self-esteem, self- and partner-rated satisfaction with current romantic relationship (when applicable), and blirtatiousness (Swann & Rentfrow, 2001). Accordingly, several secondary hypotheses are proposed relating to these variables, as well.

RS hypotheses

Hypothesis 1a. Given the greater likelihood of both peer rejection (Barkley, 1998; Erhardt & Hinshaw, 1994) and negative parent-child relationships in childhood (see review in Edwards, Barkley, Laneri, Fletcher, & Metevia, 2001), *both the ADHD-C and ADHD-IA groups will have higher RS than the non-diagnosed control group*. Another factor that plays a role in RS is high emotional reactivity; the previously noted findings regarding unmodulated emotional responses in ADHD children (e.g., Hinshaw

& Melnick, 1995) are more characteristic in ADHD-C than ADHD-IA. Accordingly, it is further expected that *the ADHD-C group will report a higher mean RS than the ADHD-IA group*.

Hypothesis 1b. Given the buffering effect of low RS that has been observed in non-diagnosed samples, it is hypothesized that *low RS individuals with ADHD will have more positive relational outcomes than high RS individuals with ADHD*.

Hypothesis 1c. Given observed differences in the quality of childhood (Henker & Whalen, 1999) and adult social interactions (Canu & Carlson, 2003), it is expected that *ADHD-C individuals will report higher relationship investment style related to RS than those with ADHD-IA.*

SM hypotheses

Hypothesis 2a. Given the core deficits of inattention and disinhibition (Swanson et al., 1998; Barkley, 1996) that characterize the ADHD-C and -IA populations, it is believed that *both ADHD groups will have a lower mean SM than the nondiagnosed control group.*

Hypothesis 2b. Although the ADHD-C group would seemingly lack the ability to inhibit and modify social responses according to cues from a social partner, their more outgoing social style (Canu & Carlson, 2003; Henker & Whalen, 1999), as compared to the ADHD-IA subtype, may facilitate a higher degree of SM, as ADHD-IA individuals may withdraw and self-focus more frequently (Henker & Whalen, 1999). The higher motivation to impress others noted for those with childhood ADHD-C (versus ADHD-IA; Carlson et al., 2002) may also contribute to one's drive to SM. It is therefore

expected that *the ADHD-C group will have a higher mean SM than their ADHD-IA peers*.

Hypotheses regarding satisfaction and other variables

Hypothesis 3a. Given a relatively consistent pattern in existent literature of sub-par self-esteem in both child and adult ADHD groups, it is believed that *both ADHD groups will report lower self-esteem than non-diagnosed controls.*

Hypothesis 3b. Since high RS is associated with lower satisfaction in romantic relationships (Downey & Feldman, 1996) and ADHD has also been associated with unsuccessful outcomes in this domain (Biederman et al., 1993; Weiss et al., 1985; Murphy & Barkley, 1996), it is expected that *those individuals who are currently romantically involved in both ADHD groups will evince lower self- and partner-rated relational satisfaction than their non-diagnosed peers*.

Hypothesis 3c. Relatedly, high RS predicts curtailed romantic relationships (Downey et al., 1998). High SM is also related to short-lived liaisons (Snyder & Simpson, 1984). Accordingly, it is hypothesized that *groups will differ on mean romantic relationship duration, with non-diagnosed controls reporting the longest duration and individuals with ADHD-C reporting the shortest.* It is further believed that *participants in the ADHD-C group will report the highest number of lifetime romantic partners.*

Hypothesis 3d. High RS combined with a low relational investment style is associated with a smaller network of friends (Downey et al., 1997, 2000). Additionally, Henker and Whalen (1999) have noted that many ADHD/IA children may not seek out

peer contact and generally withdraw from social opportunities, and Weiss and colleagues (1979) found that young adults with ADHD report fewer friendships. Accordingly, it is expected that *ADHD-IA individuals will report less perceived support from their friendship networks than other groups*.

Hypothesis 3e. Converging findings from the ADHD literature suggest divergent levels of blirtatiousness in the ADHD-C and -IA subtypes. The sluggish cognitive tempo found in ADHD-IA children (Carlson & Mann, 2002), lower verbosity in an adult heterosocial interaction (Canu & Carlson, 2003), and a characteristically withdrawn and reluctant social style (Henker & Whalen, 1999) suggest an association between ADHD-IA and low blirtatiousness. Further, as the ADHD-C group has cores symptoms of impulsivity as well as more positive and negative responses in social situations (Maedgen & Carlson, 2000), it is hypothesized that the *ADHD-IA group will have a lower mean blirtatiousness than the ADHD-C group*.

Chapter 2: Methods

Sample

Seventy-eight heterosexual, male participants between the ages of 18 and 24 were recruited at a large, public university (75%) and an urban community college (25%) in the Southwest United States. Data collection was completed during the Spring and Summer academic sessions of 2003. Students initiated contact in response to advertisement by the author (i.e., posters) and by staff members at these participating institutions (e.g., e-mail from Office for Students with Disabilities).

A diagnostic telephone screening largely focusing on DSM-IV diagnostic criteria for ADHD facilitated group assignment to non-diagnosed control (n = 25), ADHD-C (n = 31), and ADHD-IA (n = 22) groups. These participants completed study procedures, were paid $20, and were eligible to participate in a related project for which they could earn another $20. One participant in the control group was excluded from data analyses due to high scores (> +1 *SD* above normed mean) on Wender Utah Rating Scale and Conners Adult ADHD Rating Scale measures, bringing the final number in that group to twenty-four. Recruitment of ADHD participants was roughly equivalent across campuses; 67% of participants from the university met criteria for one of the ADHD groups, as compared to 73% from the community college.

Thirty-five additional men contacted the author regarding study participation but were excluded after the telephone interview for the following reasons: had previous diagnosis of ADHD but did not report sufficient childhood symptoms and/or impairment to meet ADHD group criteria (n = 4), reported above-threshold childhood ADHD but had no prior diagnosis (n = 3), reported childhood symptoms more characteristic of ADHD-

HI than included ADHD subtypes (*n* = 5), reported above-threshold childhood ADHD but was borderline between ADHD-C and ADHD-IA (*n* = 1), reported above-threshold childhood ADHD but indicated that anxiety was main factor in symptoms (*n* = 1), was no longer (*n* = 3) or never (*n* = 1) a student at either institution, reported bisexual orientation (*n* = 1), was too old (*n* = 3), had a disconnected phone when interview was attempted (*n* = 4), never replied to messages regarding scheduling phone interview (*n* = 6), did not show up for scheduled data collection session and ignored follow-up calls (*n* = 1), and contacted the author too late to be included in study (*n* = 2).

A majority of the participants were Caucasian (*n* = 46), although several were of Asian (*n* = 18), Hispanic (*n* = 7), and multi-ethnic (*n* = 6) origin. The average family-indexed socioeconomic status (SES; i.e., highest-rated parent vocation) was in the professional range. More detailed demographic and psychiatric description of this sample is included in Table 1.

Participants who were currently in romantic relationships (*n* = 30) were asked to give a confidential questionnaire packet to their partner; in addition to questionnaires, a $2 payment and a stamped, return envelope were included. The overall response rate for these romantic partners was 40% (*n* = 12). The romantically-involved participants reported their current relationships to have a mean duration of 15 months (*SD* = 11).

Demographic and Diagnostic Measures

Wechsler Adult Intelligence Scale—Revised (WAIS-R; Wechsler, 1981)

Two subtests— Information and Picture Completion—from this well-normed test of general cognitive ability were administered to participants by the author. This brief form is considered to produce a valid estimate of Full Scale IQ (FSIQ; *r* = .88 for the

norming sample). Estimated FSIQ was derived using Kaufman's (1990) formula for this dyad of scores.

Biographical information questionnaire

This 9-item questionnaire taps multiple demographic domains, including age, ethnicity, sexual preference, SES (calculated using higher of maternal and paternal vocation in past year; Stevens & Featherman, 1981), SAT or ACT score (when available), highest grade level completed, history of serious medical problems, history of psychiatric diagnosis, and history of receiving counseling or other intervention for mental health problems.

Telephone screening interview

This approximately 30 minute interview was conducted by the author and largely reviewed ADHD, ODD, and CD symptoms modeled after the procedures of Barkley and Murphy (1998). This section of the interview assessed DSM-IV diagnostic status (e.g., symptom presence, impairment, age of onset) for childhood (i.e., ages 5-12) and current timeframes. Other questions gathered demographic information relevant to study participation (e.g., age, student status, sexual preference, previous diagnosis of ADHD, profession of diagnosis provider) and, for those who met inclusion criteria, pre-meeting instructions (e.g., to restrict use of stimulant medication on day of study session). Finally, 12 questions tapped the perceived importance (1 = *not at all important to me*, 10 = *extremely important to me*) of varying dimensions of professional life; 10 of these items were derived from a review of work preferences by Zytowski (1970) and 2 additional items (physical workspace, formal dress code) were added by the author to

enhance the range of response. Answers to these work preference questions were used to facilitate the self-monitoring/rejection sensitivity induction procedure (see below).

Conners Adult ADHD Rating Scale-Self Report: Screening Version (CAARS-S:SV; Conners, Erhardt, & Sparrow, 1999)

The CAARS-S:SV (hereafter shortened to CAARS) is a 30-item self-report questionnaire designed to probe current manifestations of ADHD in adults. Eighteen items are worded closely to DSM-IV criteria for ADHD; 12 items are included that provide additional behavioral information related to adult ADHD. Responses are given on a 4-point scale equivalent that of the CSS. This form provides two factor scores that will be focused on in this study: DSM-IV Inattentive Symptoms and DSM-IV Hyperactive-Impulsive Symptoms (.81 and .64 1-month test-retest reliabilities, respectively). The Inattentive and Hyperactive-Impulsive scales have high positive correlations with matching DSM-IV symptom clusters (.89 and .74, respectively) in males (Conners et al., 1999).

Wender Utah Rating Scale (WURS; Ward, Wender, & Reimherr, 1993)

The WURS is a self-report, 61-item checklist designed to tap adults' recollection of childhood ADHD symptoms. Ward, Wender, and Reimherr analyzed the 25 items showing the greatest mean difference between an ADHD and a NC sample and found them to be efficient at discriminating group membership for individuals. Responses are given on a 5-point scale from *not at all or very slightly* to *very much*. Two cutoff scores are identified for diagnostic categorization using this 25-item subset; a raw score of 36 has a 96% sensitivity for ADHD (as well as a 96% specificity), whereas a higher cutoff

of 46 better differentiates non-diagnosed, depressed, and ADHD groups (86% sensitivity for ADHD, 99% specificity). The Spearman-Brown corrected split-half reliability was $r = 0.9$ (in non-ADHD adults, $N = 100$). Pearson correlation coefficients, determined for concurrent validity with Parent Rating Scale (Conners, 1973) scores, was $r = 0.49$ for non-diagnosed controls and $r = 0.41$ for adults with ADHD. These moderate correlations are more impressive given that both measures were retrospective and completed by different informants.

Beck Anxiety Inventory (BAI; Beck & Steer, 1990)

The BAI is a 21-item measure of somatic and cognitive aspects of anxiety. Respondents rate how much each symptom has bothered them in the past week on a 4-point scale (0 = *not at all*, 3 = *severely*). The BAI has been shown to have good split-half and test-retest reliability as well as concurrent validity with other established measures of anxiety (Beck & Steer, 1991).

Beck Depression Inventory (BDI; Beck, 1967)

The BDI is a well-established inventory that assesses the presence and severity of cognitive, behavioral, and affective components of depression. Respondents select statements that best fit their experience in the last two weeks that correspond to a 4-point scale of depressive severity (0 = negligible, 3 = severe). It has been shown to have excellent split-half reliability and correlates significantly with other depression measures as well as clinicians' ratings of depression. The short form (13 items) of the BDI was used for this study, which correlates .96 with the original version (Beck & Beck, 1972).

Dependent Measures

Rejection Sensitivity Questionnaire (RSQ; Downey & Feldman, 1996)

The RSQ is a 36-item self-report measure of anxious expectations of rejection on 18 social situations relevant to adult interactions (e.g., "You go to a party and notice someone on the other side of the room, and then you ask them to dance"). Participants are initially asked to indicate the level of anxiety they have about the outcome of each situation on a 6-point scale (1 = *very unconcerned*, 6 = *very concerned*). Participants then report the likelihood that the other person (or persons) would respond in an accepting way (i.e., expectancy of acceptance), again using a 6-point scale (1 = *very unlikely*, 6 = *very likely*). RSQ score is computed as follows. First, a rejection sensitivity score fore each situation is obtained by reversing the score on expectancy of acceptance (i.e., expectancy of rejection = 7 – expectancy of acceptance). Next, this expectancy of rejection score is multiplied by the situational degree of anxiety (i.e., situational rejection sensitivity). Finally, the total, cross-situational rejection sensitivity score is calculated by summing the situational rejection sensitivity scores and dividing by 18. The RSQ has a high reported internal (α = .83) and 4-month test-retest reliability (α = .78), and has been shown to predict perceived rejection in ambiguous situations, amount of hurtful intent attributed to romantic partner's insensitive behavior, and insecurity and dissatisfaction in romantic relationships. A slightly modified version of the RSQ was completed by romantic partners of participants (tapping perceptions of the participant instead of self).

Self-Monitoring Scale (SMS; Snyder, 1974)

The SMS is a 25-item self-report measure composed of self-descriptive items with a True-False response format; 12 items are keyed as False and 13 as True for high self-monitoring. These items tap concern with social appropriateness of self-presentation, attention to social comparison information as cues to appropriate self-expression, the ability to control and modify self-expression, the use of this tactic in specific situations, and the extent to which the participant's expressive and self-presenting behavior is consistent across situations. The SMS has a reported internal reliability of .70 and a 1-month test-retest reliability of .83, and has good discriminant and predictive validity. A slightly modified version of the SMS was completed by romantic partners of participants (tapping perceptions of the participant instead of self).

Balanced Inventory of Desirable Responding (BIDR; Paulhus, 1988)

This 40-item measure taps degree to which respondents engage in impression managment (IM; i.e., deliberate, outcome enhancing self-presentation to others) and self-deceptive positivity (i.e., tendency to give honest but positively-skewed responses). IM is closely linked to and subsumed within the construct of self-monitoring; the IM scale was intended for use in this study as a validity check for possible group differences on self-monitoring. The IM scale has been shown to have good internal consistency (α = .75 to .86), 5-week test-retest reliability (r = .65), and to correlate highly with traditional indicators of false responding (e.g., MMPI Lie Scale).

Self-monitoring/Rejection Sensitivity Induction Procedure (SRSIP)

The SRSIP was designed for this study to provide in-vivo measures of rejection sensitivity and self-monitoring. During the data collection session, each participant was

told that, since the experimenter (the author) was collecting a lot of information from him, part of the study included time for the experimenter to share some of his personal information with the participant to "level the playing field." The experimenter then gave the participant information about "his own work preferences" on the same work preference items that the participant had previously answered during the telephone interview. This feedback was manipulated as follows: 4 "experimenter responses" on selected (or "targeted") items—chosen on the basis of either high or low importance as rated by participant— were made noticeably discrepant (5 points in opposite direction of importance), with the other 8 responses equivalent to the corresponding participant responses.

This manipulation set up salient "differences" between the participant and the experimenter. The Negative Affectivity Scale (NAS; 10-items) of the *Positive Affect Negative Affect Scale* (Watson et al., 1988) was administered directly after this feedback to tap negative affect in that moment, a possible indication of rejection reactivity. Further, at the end of the questionnaire battery, participants completed a measure of occupational interests (see below); amount of change from telephone screening responses on experimenter-participant discrepant items as well as change for non-targeted items served were incorporated as measures of self-monitoring (i.e., change of self-presentation to fit social partner's preferences).

Measure of occupational interest (MOI)

This 12-item questionnaire is a paper-and-pencil version of the questions asked regarding work preferences in the telephone screening interview. Items are completed on the same 10-point scale (1 = *not at all important to me*, 10 = *extremely important to me*).

Dating and sexual inventory

This 22-item questionnaire inquires about the breadth and timing of prior sexual and dating experience as well as details regarding current dating. Fourteen items tap the age that certain dating (n = 4) and sexual (n = 10) milestones were reached. Examples of dating milestones include "first dating attempt (asking someone out)" and "first steady dating (regular dating with one partner)." Sexual milestone items run the gamut of intimacy and were an expanded version of those used in the *National Survey of Adolescent Males* in 1988 and 1995 (see Gates & Sonestein, 2000); they include "held hands with romantic partner," "manually stimulated romantic partner's vagina (under her clothes)," and "had vaginal sex." Responses were made on a response scale of whole-numbered ages from "< 14" to "> 18" with spaces at these extremes to write actual age of initial experience. Those who had not yet reached a certain milestone indicated this by circling the "> 18" response but leaving the write-in space blank. One item asked participants to list, by initials, all of the romantic partners they have had (and can remember) and the length, in months, of the relationship (with those of less than one month counted as "1"). Participants indicated whether they were currently in a romantic relationship; those that were then answered whether it was "long-distance" (Y / N) and how frequently they saw and, separately, dated their partner (on a 7-point scale; 1 = *once a month or less*, 4 = *1-2 times per week*, 7 = *once or more every day*). Finally, three

questions asked how many people the participant has asked out on a date in the past year, how many of those people accepted, and if the participant would like to date more frequently (including a cue to give an open-ended response of why or why not).

Investment in romantic relationships index (Investment index)

A 2-item index previously used by Downey and colleagues (2000) originally imbedded measure of self-perception for college students (Neeman & Harter, 1986) was used to assess participants' investment in romantic relationships. Participants responded to the following statements on a 4-point scale (1 = *not really true of me*, 4 = *really true of me*): "Some students do not feel the ability to establish romantic relationships is important" (reverse coded), "Some students feel that being able to establish romantic relationships is important." The reported Pearson correlation between the 2 items is .77 and, controlling for rejection expectations, has been shown to significantly correlate with a measure of avoidant attachment (r = -.22; Downey et al., 2000).

Locke-Wallace Marital Adjustment Test (LWMAT; Locke & Wallace, 1959)

The wording of this 15-item self-report measure of marital adjustment (i.e., accommodation between partners) was modified slightly to pertain to the romantic relationships of this primarily dating-age sample, and serves as a measure of satisfaction. Items are scaled and weighted differently; the range of scores on the LWMAT is 2 (extremely negative adjustment) to 158 (extremely positive adjustment). Internal reliability, as estimated with a Spearman-Brown correlation, has been shown to be very good (r = .90), and this measure has proven useful in differentiating between well- and

poorly-adjusted marital couples. Three additional questions were included tapping length of current relationship and favorite/least favorite characteristic of the romantic partner.

About my friendships questionnaire

This is a 10-item measure that examines breadth and perceived support of friendships. Participants reported initials of "close friends" (not including romantic partner or close family) and frequency of contact as rated on a 7-point scale (1 = *once a month or less*, 4 = *1-2 times per week*, 7 = *once or more every day*). Overall perceived support from this network of friends was assessed using the 9-item friend support scale of the Provision of Social Relationships measure (Turner et al., 1983). Participants evaluated how much each item was like them on a 5-point scale (1 = *very much like me*, 5 = *not at all like me*). Example items include "When I'm with my friends, I feel completely able to relax and be myself" and "I feel very close to some of my friends."

Rosenberg Self-Esteem Questionnaire (SEQ; Rosenberg, 1979)

The SEQ is a 10-item scale assessing self-image; a short form of 8 items that maximize internal reliability (α = .84; Ayduk et al., 2000) was administered. The original SEQ has a reported 2-week test-retest reliability of .85.

BLIRT (Swann & Rentfrow, 2001)

The BLIRT is an 8-item measure that taps blirtatiousness, or how quickly, frequently, and effusively people tend to respond to social partners. Participants indicate the extent to which they agree to pertinent self descriptions (e.g., reverse coded: "When emotions are involved, it's difficult for me to argue my opinion"; "I always say what's on my mind") on a 5-point scale (1 = *strongly agree*, 3 = *neither agree nor disagree*, 5 =

strongly disagree). Item scores are summed and averaged to produce the BLIRT scale score. The BLIRT has high internal (α = .84) and 3-month test-retest (.74) reliability, as well as excellent construct and external validity.

Break-up questionnaire

This checklist has been used in prior research to assess perceptions of why a dating relationship has ended (C. Surra, personal communication, November 15, 2003) and is based on the work of Hill and colleagues (Hill, Rubin, & Peplau, 1976) regarding the dissolution of premarital relationships. Participants select as many situations from a list of 14 as they deem to have contributed to the last break-up they experienced (those with no prior dating experience did not have to complete the measure). Examples include "You and your partner had different values" and "You felt that you were giving more to the relationship than you were receiving." From among these, participants then selected the most influential reason for the relationship having ended. An open-ended question at the end tapped any additional, non-listed reasons that contributed to the break-up. Two additional questions were added in this study: "How long ago did the relationship end?" and "How long did the relationship last?"

Procedure

Participants responding to recruitment posters or other announcements completed the telephone screening interview with the author. Those who indicated they had a previous diagnosis of ADHD were eligible for the study if they met DSM-IV criteria for ADHD-C or ADHD-IA subtypes, including above-threshold symptom presence (6 or more symptoms of hyperactivity-impulsivity and (ADHD-C)/or (ADHD-IA) inattention),

onset of symptoms before age 12, and impairment due to these symptoms in 2 or more settings. Assignment to ADHD subtype groups was facilitated by these childhood symptom reports. Participants indicating they did not have a history of ADHD completed the same telephone interview and were eligible to take part in the study if they did not meet the ADHD criteria listed above. For inclusion in study analyses, members of this non-diagnosed control group also had to score below a level previously established as the mean plus one standard deviation for male college students on the WURS (mean = 20.9, *SD* = 15.5; Canu & Carlson, 2003). After the telephone interview was completed, eligible participants scheduled an appointment to complete data collection procedures. Those participants in the ADHD groups who were taking stimulant medication to address their symptoms (49%) were instructed to refrain from taking this medicine before the session on the day of data collection.

The single data collection session lasted between one-and-a-half and two hours, and was conducted in a medium-sized, private laboratory room devoted to this purpose. Data collection procedures were conducted by the author, who was available throughout to assist participants. The session began with participants reading and signing consent for study procedures; all had an opportunity to ask questions before continuing. Next, the WAIS-R subtasks were completed. Questionnaires were then administered in a battery of two sections, separated by the SRSIP. The standardized order was as follows: CAARS, WURS, BDI, BAI; SRSIP; BLIRT, biographical information questionnaire, dating and sexual inventory, LWMAT, break-up questionnaire, investment index, about my friendships questionnaire, SMS, RSQ, SEQ, BIDR, MOI. The BDI was scored during

the second portion of the questionnaires to assess for severe depressive symptoms and/or suicidality (no study participants met either condition).

Questionnaires were labeled with only a study participant number. In order to maximize confidentiality, when all questionnaires were complete they were placed by participants in an unmarked manilla envelope which was then sealed and placed it in a drop box, from which it was later collected for scoring and data entry. All participants were debriefed about the study's goals and procedures—including the deception in the SRSIP—and were asked to sign a re-consent form for the use of the information gathered through the SRSIP (all participants did). Finally, participants who were currently in a romantic relationship were given a packet containing a cover letter, questionnaires (LWMAT and participant-focused SMS, RSQ), a $2 payment and a stamped return envelope to give to their partners. All participants were paid $20 in cash for completion of study measures.

Chapter 3: Results

Power Considerations

Cohen (1992) outlines recommendations for sample size to achieve a statistical power of .80 at varying levels of alpha. Setting a relatively liberal alpha level ($\alpha = .10$), considered acceptable for an exploratory study, approximately 40 participants are recommended per cell to detect differences of medium effect size using a three-group ANOVA procedure; fewer than 20 participants per cell, however, will suffice to detect large differences (Cohen, 1992). The final numbers of participants in the main comparison groups (i.e., ADHD-C, ADHD-IA, and non-diagnosed controls) fell in an intermediate range, suggesting that differences of medium-to-large effect size can be detected in most analyses.

General Analytic Strategy

Multivariate ANOVA (MANOVA) and/or one-way ANOVA procedures were used to assess group differences on general demographic indicators (i.e., IQ, age, education level, SES), diagnostic measures, and dependent variables. Wilks' Lambda ( ) was used as the indicator of overall group differences for all MANOVAs reported here.

Several composite variables were derived to reduce the number of dependent variables for statistical analysis. These variables and the calculations used to derive them are listed in Table 2.

Box and Levene tests were used to determine whether the assumption of homogeneity of variance was met prior to MANOVA and ANOVA analyses. When these tests were "passed" (i.e., nonsignificant, indicating assumption was met), and the

Wilks' Lambda was statistically significant, follow-up analyses (i.e., ANOVAs and 2-tailed *t* or Games-Howell pairwise comparisons) were conducted to more precisely specify group differences. In several instances, Box's and/or Levene's tests were significant (i.e., indicating a violation of the homogeneity of variance assumption). In such cases, the variables identified as having unequal distribution of group variances were subsequently examined using Kruskal-Wallis tests. The Kruskał Wallis procedure uses mean rank order of scores as a basis of comparison between 3 or more groups—hence, making no homogeneity of variance assumption—and produces a chi square (^{2}) statistic. When a Kruskal-Wallis ^{2} was significant, follow-up Mann Whitney tests, commonly used for nonparametric pairwise comparisons, were used to clarify the pattern of differences between groups.

In addition to ANOVA procedures, other analyses (e.g., regression, chi-square, 2-tailed *t*-tests, effect size calculations) were used, where appropriate, to examine a priori hypotheses and clarify the pattern of results. Further explanation is noted in relevant sections that follow.

Given the exploratory nature of the study, when "umbrella" analyses (e.g., MANOVA, ANOVA, regression) resulted in nonsignificant differences ($p > .05$), these were followed up for variables on which pairwise comparisons were planned (i.e., related directly to a priori hypotheses).

Demographic Variables

Mean scores and standard deviations for demographic and descriptive variables are provided in Table 1. ANOVAs were conducted to examine group differences on estimated FSIQ, age, and education level. None of these indicated significant differences

(estimated FSIQ F (2, 74) = .14, p = .87; age$F$ (2, 74) = .34, p = .72; education level F (2, 74) = 2.37, p = .10).

A Kruskal-Wallis test was used to examine group differences for SES. The results of this test were also nonsignificant (χ^2 (2, N = 77) = 1.33, p = .52). Given the overall lack of notable group differences, further analyses were not controlled for variance on these demographic variables.

Diagnostic Variables

A MANOVA was conducted to test for group differences on the following six diagnostic variables: number of ADHD inattention (IA) and hyperactivity-impulsivity (HI) symptoms reported for childhood and IA symptoms for adulthood (during telephone interview), WURS score, and HI and IA *t*-scores on the CAARS. The overall MANOVA test was significant (Λ = .04, F (12, 138) = 46.73, p < .01). All follow-up ANOVAs for these variables were also significant (interview child IA symptoms F (2, 74) = 216.54, interview adult IA symptoms F (2, 74) = 115.73, interview child HI symptoms F (2, 74) = 193.31, CAARS IA F (2, 74) = 77.10, CAARS HI F (2, 74) = 37.40, WURS F (2, 74) = 68.97; all p < .01). Games-Howell pairwise tests were used to assess group differences. As noted in Table 1, the direction of differences is as expected, with both ADHD groups scoring higher on IA measures than control participants, and the ADHD-C group reporting higher levels of HI symptoms than the other groups. In addition, although well under the ADHD diagnostic cutoff for HI symptoms, the ADHD-IA group mean scores for HI measures were statistically higher than the control group's.

Kruskal-Wallis tests were used to examine differences on telephone interview adulthood HI symptoms as well as BDI and BAI scores. All of these analyses were statistically significant (interview adult HI symptoms χ^2 (2, N = 77) = 46.73, $p < .01$; BDI χ^2 (2, N = 77) = 10.31, $p < .01$; BAI χ^2 (2, N = 77) = 12.77, $p < .01$). Mann Whitney tests showed the same pattern noted for HI symptoms in ANOVAs reported above. Further, both ADHD groups reported higher depressive and anxious symptoms than their non-diagnosed peers.

Correlations were derived between WURS score and CAARS inattentive (IA) and hyperactive-impulsive (HI) symptom scales in order to shed light on how much each of these symptom clusters is represented by the WURS score. The WURS-HI scale correlation was r = .75 (n = 77, 2-tailed $p < .01$), whereas the WURS-IA scale correlation was r = .77 (n = 77, 2-tailed $p < .01$).

Self report Questionnaire Measures

Table 3 provides mean scores and standard deviations for self-report measures, including the composite variables described in Table 2. Before pursuing analyses regarding group differences, a correlation was derived to ensure that the central variables of RS and SM were unrelated. The Pearson r was -.07, indicating that these can reasonably be considered as independent constructs.

Rejection Sensitivity

An ANOVA was conducted to examine differences on self-reported RS. Contrary to hypotheses, this analysis showed no significant group differences (F (2, 74) = .07, p = .93). Planned pairwise t-tests were conducted and none were close to statistical

significance, corroborating this result, which runs counter to the hypothesis that non-diagnosed control participants and those in the ADHD groups would have diverging levels of RS.

Self-monitoring

A MANOVA examining differences on self-reported SM and the IM scale score from the BIDR also yielded a nonsignificant Wilk's value ($\Lambda = .93$, F (4, 146) = 1.40, p = .24), indicating no differences on these two variables. While the planned follow-up ANOVA for SM was also nonsignificant (F (2, 74) = 1.97, $p = .15$), at the pairwise level a nearly significant trend was noted for the ADHD-C to report higher SM than non-diagnosed control group (t (53) = 1.76, $p = .08$). This pattern of results contradicts the hypotheses that the ADHD groups would have lower levels of SM than their diagnosed peers and that the ADHD-IA and ADHD-C subtypes would also be differentiated by SM.

Correlations between the IM and SM scores were derived to test the assumption that IM was related to SM. Unexpectedly, there was a marginally negative relationship between these measures ($r = -.18$, $n = 77$, 2-tailed $p = .06$). Within the different comparison groups, the strength of this relationship varied but was still insubstantial (ADHD-C group $r = -.28$, $n = 31$, 2-tailed $p = .13$; ADHĐ IA $r = -.01$, $n = 22$, 2-tailed $p = .95$; control $r = -.13$, $n = 24$, 2-tailed $p = .54$). As such, further discussion will focus on the findings related to self-reported SM.

Romantic relational indices

A MANOVA examined two variables: total number of women dated and the percentage of time in romantic relationships since dating began (see Table 2). This

analysis yielded a significant overall result (Λ = .83, F (4, 146) = 3.67, p < .01). The ANOVA for number of romantic partners was also significant (F (2, 74) = 5.75, p < .01). As hypothesized, the ADHD-C group reported significantly more partners as compared to the non-diagnosed control group (t (53) = 3.57, p < .01). In addition, the ADHD-IA group also reported more romantic partners than controls (t (44) = 2.07, p = .04).

The follow-up ANOVA for percentage of time in relationships did not quite meet the cutoff for significance (F (2, 74) = 3.01, p = .06). Planned pairwise t-test comparisons showed ADHD-C participants to have spent more of their "dating years" in a romantic relationship than their ADHD-IA peers (t (51) = 2.20, p = .03). There was also a nonsignificant trend in the same direction between the ADHD-C and non-diagnosed control groups (t (53) = 1.87, p = .07).

A Kruskal-Wallis test was used to examine average length of romantic relationship. Contrary to the hypothesis, group differences were not significant (χ^2 (2, N = 77) = .65, p = .72). Planned pairwise comparisons using Mann Whitney analyses were also nonsignificant.

While not explicitly included in the a priori hypotheses, the composite sexual milestones variable (see Table 2) was examined to include an overall group comparison of lifetime sexual adjustment. A Kruskal-Wallis test indicated significant group differences (χ^2 (2, N = 72) = 8.21, p = .02). Follow-up Mann Whitney comparisons showed the ADHD-C group to have lower scores (i.e., indicative of earlier and more diverse sexual experience) than both the non-diagnosed and ADHD-IA groups.

Investment index in ADHD groups

A 2-tailed *t*-test was used to analyze the difference between the ADHD-C and ADHD-IA group means on investment index score. As expected, this test indicated that the individuals in the ADHD-C group reported higher personal investment in romantic relationships than their peers with ADHD-IA (t (50) = 2.23, p = .03).

Current romantic relational satisfaction

The overall group differences on current relational satisfaction, as measured by the self-reported LWMAT score, were nonsignificant (F (2, 27) = 1.69, p = .20). Planned pairwise 2-tailed *t*-tests were conducted; one nonsignificant trend was found, with ADHD-C participants reporting higher LWMAT scores than those with ADHD-IA (t (21) = 1.77, p = .09).

As the items on the LWMAT were originally designed and normed for measuring relational satisfaction in married couples and could apply differently for the non-married couples represented in this study (e.g., level of agreement on "handling family matters"), the first item on the measure ("degree of happiness" in the relationship) was examined separately to assess the validity of the results. The Pearson correlation between this item and the overall scale score for participants was robust (r = .87, n = 30, 2-tailed p < .01), and group scores on this item showed a similar trend to overall LWMAT scores (7-point item scale; NC M = 5.22, SD = 1.2; ADHD-C M = 5.33, SD = 1.28; ADHD IA M = 4.67, SD = 1.33).

Friendship and self-esteem variables

A MANOVA was executed to examine differences on self-esteem, the extent of contact with close friends day-to-day (see Table 2), and the friend support scale score.

The overall result of the MANOVA was significant ($\Lambda = .81$, F (6, 144) = 2.68, $p = .02$). Follow-up ANOVAs indicated no significant group differences for extent of contact with close friends (F (2, 74) = .24, $p = .79$) or the friend support score (F (2, 74) = 1.86, $p = .16$). However, planned pairwise *t*-tests revealed a trend for ADHD-IA participants to report lower perceived support from friends (t (44) = 1.93, $p = .06$), as compared to non-diagnosed controls, which is in line with initial expectations. In addition, results on the ANOVA for self-esteem (F (2, 74) = 5.88, $p < .01$) and subsequent *t*-tests confirmed the a priori hypothesis that individuals in the non-diagnosed control group would have higher self-esteem than those in the ADHD-C (t (53) = 3.39, $p < .01$) and ADHD-IA (t (44) = 2.20, $p = .03$) groups.

BLIRT

Group differences for BLIRT scores were examined using an ANOVA procedure. Contrary to expectations, no significant differences were detected (F (2, 74) = 1.32, $p = .27$). Planned pairwise *t*-tests were also nonsignificant.

To examine the potential relatedness of the BLIRT to the behaviors that are characteristic of ADHD, a Pearson correlation was derived between BLIRT scores and CAARS scale scores for hyperactivity-impulsivity (HI) and inattention (IA). There were significant yet modest correlations between the BLIRT and these two ADHD indices (HI: $r = .30$, $n = 77$, 2-tailed $p = .01$; IA: $r = .25$, $n = 77$, 2-tailed $p = .03$)

Partner-report Questionnaire Measures

A MANOVA was executed to examine differences on the three principal romantic-partner report variables: the partner's estimate of the participants RS and SM

and the partner's own relational satisfaction. Contrary to hypotheses, the result from this analysis was not significant ($\Lambda = .53$, F (6, 14) = .87, $p = .54$).

Planned follow-up comparisons for these variables were conducted. The ANOVA for LWMAT score did not reach significance (F (2, 9) = 2.58, $p = .13$); however, the pairwise 2-tailed *t*-tests yielded a nonsignificant trend for the partners of ADHD-C participants to report higher LWMAT scores than those of the ADHD-IA group (t (6) = 2.07, $p = .08$). As noted for participant reports, the correlation between the partner LWMAT scores and the single item that specifically taps happiness in the relationship was quite high ($r = .9$, $n = 12$, 2-tailed $p < .01$).

The planned ANOVA and pairwise follow-up comparisons for partner-estimated RS or SM were nonsignificant. See Table 4 for precise group scores on these three partner-report variables. As a planned validity check, Pearson correlations were used to examine the relationship for participants' scores on RS and SM across informants (i.e., self-ratings and partner ratings). The observed correlation for RS ratings was $r = .36$ ($n = 12$, $p = .13$); for SM, $r = .33$ ($n = 12$, $p = .15$).

In-vivo Measures (SRSIP)

Although the group differences on self-reported and partner-estimated RS scores were nonsignificant, a Kruskal-Wallis test run on Negative Affect Scale (NAS) scores during the SRSIP yielded a significant result (χ^2 (2, $N = 77$) = 25.21, $df = 2, 75$, $p < .01$). Planned follow-up Mann Whitney tests indicated that both ADHD-IA and ADHD-C participants reported higher negative affect during the SRSIP as compared to non-

diagnosed peers. This result suggests that ADHD participants experienced more negative emotional arousal during the SRSIP, which could be an indication of higher RS.

While the NAS data did not meet the homogeneity of variance criterion, post-hoc ANOVA analyses were conducted, using BAI and BDI scores as covariates, to assess the robustness of this result while controlling for baseline levels of anxious and depressive symptoms. While covarying BAI score, group effects were still robust (F (3, 73) = 3.39, p = .04), but when BDI scores were covaried the result was nonsignificant (F (3, 73) = 1.64, p = .20).

Two additional variables derived from SRSIP data were examined: the amount of change noted on participant Measure of Occupational Interest (MOI) ratings during the SRSIP that could be attributable to self-monitoring, and the relative amount of change on participants' ratings of "targeted" (i.e., disparate rating between participant and experimenter) and non-targeted MOI dimensions. Participants' self-monitoring change scores were the average of the difference *in the direction toward the experimenter* between each participant's pre- (i.e., telephone interview) and post-SRSIP (i.e., at the end of the questionnaire battery) ratings for the four targeted occupational dimensions. The relative amount of change between targeted and non-targeted MOI dimensions was twice the absolute change between pre- and post-SRSIP ratings on the targeted dimensions (to account for the smaller number of variables that were targeted) divided by the absolute change on the non-targeted dimensions.

An ANOVA detected no group differences for the ratio of change on targeted to non-targeted MOI items (F (2, 74) = .18, p = .83). However, a Kruskal-Wallis test run on

average amount of potential self-monitoring change on targeted MOI items indicated trend-level differences between the groups (χ^2 (2, N = 77) = 4.77, p = .09). Follow-up Mann Whitney tests showed the ADHD-IA group to have higher amounts of change in the self-monitoring direction (i.e., toward matching the experimenter) on the targeted MOI dimensions, as compared to the control group. Group means and standard deviations for all three of these in-vivo measures can be found in Table 6.

Effects of RS on Romantic Outcomes in ADHD Groups

Five sets of three multiple regression analyses were planned to examine the effect of RS, group assignment, and any interaction thereof on dating milestones composite score, sexual milestones composite score, percentage of time in relationships since dating began, number of women dating was attempted with in last year, and ratio of success to failure in those attempts. One analysis was conducted for each pairwise group combination, with group dummy codes as follows: *regression 1*: non-diagnosed control (NC) = 0, ADHD-C = 1; *regression 2*: NC = 0, ADHD-IA = 1; *regression 3*: ADHD-IA = 0, ADHD-C = 1. RS, group dummy code, and the interaction term were entered simultaneously in one block of predictor variables. When a multiple regression indicated the interaction was a significant predictor, regression lines were derived for the respective subgroups (NC, ADHD-IA, and/or ADHD-C) and plotted to show the nature of the relationship between RS and subgroup.

Due to a small *N* of romantically-involved participants at the time of the study (NC *n* = 9, ADHD-C *n* = 15, ADHD-IA *n* = 6), groups were combined for two simple regression analyses of RS on current relational satisfaction and frequency of dates;

forcibly, group assignment and an interaction term were not used as a predictors for these regressions.

For all regression analyses, variance inflation factor (VIF) and tolerance statistics were checked and ruled out collinearity. Further, Durbin-Watson statistics were examined and indicated that the assumption of independent errors was consistently met. In addition, Cook's distance, leverage, and the Mahalanobis distance for all potential outlying cases (± 2 standardized residual) indicated no undue influence on any of the regression equations.

RS and ADHD subtype effects on dating milestones composite score

Neither regression 1 (NC and ADHD-C: $R = .25$, F (3, 49) = 1.12, $p = .35$) or 2 (NC and ADHD-IA: $R = .28$, F (3, 41) = 1.18, $p = .33$) were better at predicting the dating milestones composite score than the mean. However, the third analysis including just the ADHD subtypes yielded a regression equation that better predicted the dating milestones composite score ($R = .4$, F (3, 48) = 3.04, $p = .04$). Both RS (standardized beta (β) = .45, $p = .03$, unstandardized beta (b) = .29) and ADHD group ($\beta = 1.12$, $p = .01$, $b = 4.88$) were significant predictors. In addition, the interaction term was significant ($\beta = -1.31$, $p < .01$, $b = -.52$). ADHD group regression lines are plotted in Figure 1, and depict that, in the ADHD-IA group, RS has a negative relationship with dating experience (i.e., as RS rises so does the predicted dating composite score, which translates to later and potentially less "advanced" dating behavior), whereas the inverse occurs in the ADHD-C group. Overall, these results suggest that ADHD-IA participants

with lower RS do enjoy a positive buffer with regards to dating, whereas low RS in participants with ADHD-C actually hinders initial dating forays.

RS and ADHD subtype effects on percentage of dating "career" in relationships

Neither of the regression equations from the first two analyses were significantly better at predicting the percentage of time in a romantic relationship since dating was initiated (NC and ADHD-C: $R = .29$, F (3, 51) = 1.55, $p = .21$; NC and ADHD-IA: $R = .26$, F (3, 42) = .99, $p = .41$). Regression 3 yielded a nearly significant result (ADHD-IA and ADHD-C: $R = .35$, F (3, 49) = 2.28, $p = .09$), yet none of the individual predictors reached this level (RS: $\beta = -.27$, $p = .21$, $b = -2.04$; group: $\beta = -.24$, $p = .56$, $b = -12.52$; RS x group: $\beta = .61$, $p = .18$, $b = 2.84$). Overall, there was no evidence of a clear buffering effect of RS for this variable within any segment of the three groups.

RS and ADHD subtype effects on number of women asked on dates in past year

None of the three regression models were better at predicting the number dating initiation attempts than the mean (NC and ADHD-C: $R = .22$, F (3, 51) = .83, $p = .48$; NC and ADHD-IA: $R = .31$, F (3, 42) = 1.51, $p = .23$; ADHD IA and ADHD-C: $R = .14$, F (3, 49) = .31, $p = .82$). This indicates no likely buffering effect for RS on this variable.

RS and ADHD subtype effects on ratio of success in dating attempts in past year

There was a nonsignificant trend for the model from regression 1 to better predict the ratio of dating initiation success versus the mean (NC and ADHD-C: $R = .38$, F (3, 45) = 2.47, $p = .07$). Here, group was a significant predictor variable ($\beta = -1.16$, $p = .03$, $b = -67.5$), whereas RS only neared significance ($\beta = .5$, $p = .07$, $b = -4.94$). Further, the interaction term was also significant ($\beta = 1.45$, $p = .01$, $b = 7.87$). Regression lines for

the control and ADHD-C groups are shown in Figure 2 to illustrate this interaction; as depicted there, lower RS is predictive of more success in initiating dates within the NC group, whereas ADHD-C participants with higher RS have more success. Neither regression equation 2 or 3 reached significance (NC and ADHD-IA: $R = .32$, F (3, 38) = 1.47, $p = .24$; ADHD-IA and ADHD-C: $R = .32$, F (3, 45) = 1.7, $p = .18$) or yielded any significant predictor variables. Altogether, these regressions suggest a buffering effect for low RS with regards to success in dating initiation in the NC group, and a negative effect for low RS in the ADHD-C group.

RS and ADHD subtype effects on sexual milestones composite score

The equation from regression 1 was a significantly better predictor than the mean (NC and ADHD-C: $R = .41$, F (3, 46) = 3.09, $p = .04$). RS was a significant predictor ($\beta = .58$, $p = .03$, $b = .20$), whereas group status was not ($\beta = .7$, $p = .16$, $b = 1.45$). However, the interaction term was significant, as well ($\beta = -1.18$, $p = .04$, $b = -.22$). Regression 2 also yielded a statistically significant equation (NC and ADHD-IA: $R = .48$, F (3, 39) = 3.8, $p = .02$), yet neither the main effect variables nor the interaction term were significant individual predictors (RS: $\beta = .33$, $p = .19$, $b = .20$; group: $\beta = .7$, $p = .75$, $b = -.57$; RS x group: $\beta = .32$, $p = .58$, $b = .1$). The third analysis resulted in a significant regression equation, as well (ADHD-IA and ADHD-C: $R = .61$, F (3, 47) = 9.18, $p < .01$). RS, again, was a significant predictor ($\beta = .71$, $p < .01$, $b = .3$), and group was marginally significant ($\beta = .72$, $p = .05$, $b = 2.02$). The interaction term in this regression was also significant ($\beta = -1.26$, $p < .01$, $b = -.32$).

Given the nature of these results, regression lines for all three groups were derived and plotted in Figure 3 to clarify the direction of interaction effects. As depicted there, individuals in the control and ADHD-IA groups with lower RS seem to have earlier and more diverse sexual experiences (i.e., a potentially "positive" buffering effect). Within the ADHD-C group there appears to be no substantial relationship between RS level and timing/breadth of sexual experience, although, in general, the members of the ADHD-C group reported earlier and more diverse sexual experiences.

RS effects on frequency of dates in current romantic relationship

The simple regression yielded a significant result (R = .43, F (1, 28) = 6.32, p = .02), with RS accounting for 18.5% (= R^2) of the variance. The direction of the effect (β = -.43, b = -.24) indicates that lower levels of RS are predictive of higher dating frequency within this sample, indicating a buffering effect.

RS effects on satisfaction in current romantic relationship

The regression model did not achieve significance (R = .19, F (1, 28) = 1.06, p = .31). Therefore, within the group of romantically active participants in this sample, level of RS does not appear to aid in the estimation of current relational satisfaction or provide a buffering effect.

Chi-square analyses between "high" and "low" RS subgroups in ADHD sample

Using the sample mean for RS (= 9.73), members of the ADHD groups were assigned to either high RS (ADHD-C n = 15, ADHD-IA n = 9) or low RS (ADHD-C n = 16, ADHD-IA n = 13) categories. Four χ^2 analyses were used to evaluate possible differences between high- and low-RS members within each ADHD group on the

dichotomous variables of “Are you currently in a romantic (dating or more serious) relationship?” and “Would you like to date more frequently?”

As noted in Table 7, only in the ADHD-IA group were the chi-square analyses significant. Phi correlations indicated a significant association between level of RS and both being in a relationship and wanting to date more (φ = -.51, .44, respectively; both $p < .05$). While these analyses do not have the predictive power of a regression, they suggest that, for the ADHD-IA group, low RS could play a buffering role with regards to these relational variables.

Summary of Regression and Chi-square Results

A total of nine variables were examined to see if low RS had a buffering effect for negative romantic outcomes. For the ADHD-IA group, indications of the expected buffering effects for low RS were present for five of the variables. Buffering effects were similarly noted on three (out of a possible seven) constructs within the non-diagnosed control group. In contrast, low RS was associated with more positive outcomes for ADHD-C participants for only one variable, frequency of dates in current dating relationship, for which the low *n* prevented using group as a predictor. Further, lower RS was a predictor of *negative* outcomes in the ADHD-C group for three of the remaining variables. Overall, the pattern of results suggests diverging effects of RS, with low RS associated with better outcomes in the control and ADHD-IA groups and worse outcomes in the ADHD-C group.

Effect Sizes

Effect sizes were calculated for select variables to illustrate the magnitude of differences between groups. These values are noted in Table 7. On 6 of the 10 variables selected (average change toward the experimenter on targeted MOI items, romantic relational investment, self-reported romantic relational satisfaction, frequency of dates in current relationship, percentage of time in dating relationships since dating onset, and timing/breadth of sexual experience), the largest differences noted were between the ADHD-C and ADHD-IA groups, with the ADHD-C group reporting more "positive" outcomes on social and sexual variables of a medium-to-large effect size.

Chapter 4: Discussion

This study endeavored to explore the presence of two putative factors for adult relational difficulties—rejection sensitivity (RS) and self-monitoring (SM)—in groups of young, heterosexual men with the major subtypes of ADHD and non-diagnosed peers. In addition, hypotheses on several other constructs (e.g., buffering effect of RS, self-esteem, general romantic relational and friendship outcomes, blirtatiousness) were offered and tested. Overall, as one expert on ADHD put it, this research "is exploratory in a domain of study that has only barely been considered previously" (M. Gordon, personal communication, April 29, 2004). Given this, it is perhaps not surprising that some of the hypotheses were supported, to one degree or another, while others received no support. The following represents an effort to draw together the assortment of results and suggest possible reasons, where appropriate, for unexpected findings.

Overall Group Differences on RS and SM

One purpose of this study was to measure whether RS and SM measures differentiate the major ADHD subtypes and controls. This was seen as a first step in exploring whether these tendencies were associated with the behaviors, childhood experiences, and general relational difficulties that often typify this disorder. It was initially predicted that ADHD participants would have higher RS and lower SM than non-diagnosed peers, yet the data did not bear out those predictions, as the groups did not differ on most relevant self- and partner-report measures.

Interestingly, differences on questionnaire and in-vivo measures emerged that directly contradicted the hypothesis that the participants with ADHD would have lower

SM than non-diagnosed peers. Pairwise comparisons revealed a nonsignificant trend (nonetheless of nearly medium effect size) for the ADHD-C group to report higher SM than the non-diagnosed participants. In fact, the mean SM score for the ADHD group was above the 75th percentile cutoff (= 15) noted by Snyder (1974) in his seminal article. In attempting to understand this surprising result, it may be relevant to assess the composition of the Self-monitoring Scale (SMS) itself. An examination of the individual items on the SMS (see Appendix 2) shows that some might be endorsed by ADHD-C individuals as a result of their hyperactive-impulsive behavior instead of actual SM behaviors. For example, an ADHD-C participant's answer of "false" (keyed toward higher SM) to "I can only argue for ideas which I already believe" could simply reflect years of impulsive responding in conversations or simply a co-occuring oppositional disposition. (Three-quarters of the ADHD-C group endorsed sufficient childhood symptoms of oppositional defiant disorder and/or conduct disorder to warrant a comorbid diagnosis.) Further, ADHD-C individuals might have selected a "true" response to being "the center of attention" in a group (keyed toward higher SM), again, due to their impulsive, attention-getting comments or actions. In short, several SMS items may be over-endorsed by those with ADHD-C due to symptom relevance and could contribute to the observed difference with the control group.

The SRSIP was devised and implemented in this research in an attempt to provide in-vivo measures of SM and RS. Measures of change on MOI items from the telephone interview to the end of the data collection session, which followed the experimenter's manipulation of appearing to have salient differences on occupational preferences, were

used as an in-vivo estimate of SM. Unexpectedly, the ADHD-IA group demonstrated significantly more change in the SM direction on targeted MOI items during the SRSIP, as compared to non-diagnosed peers. This finding suggests that those with ADHD-IA, who in other research have been characterized as socially insecure (e.g., Henker & Whalen, 1999; Canu & Carlson, 2003), felt more compelled to self-monitor (i.e., move their ratings toward the experimenter's) than controls on this face-to-face task. While the difference is medium in size it should be noted that the absolute value of the change was negligible; even the ADHD-IA participants averaged a change of less than one point (on a 10-point scale) toward the experimenter's "preferences" on the targeted MOI variables. In addition, there were no significant group differences on the ratio of absolute change for targeted versus untargeted variables. In sum, this finding may reflect simply changing more across all MOI variables when compared to controls, which is not a clear indicator of higher SM and instead fits their generally "unfocused" profile.

What, then, counterbalances the behavioral characteristics of young men with ADHD that allows them to self-monitor, at worst, on an equal level with undiagnosed peers? It is perhaps most difficult to explain how those with ADHD-IA—characterized by reluctance to engage socially (Henker & Whalen, 1999; Canu & Carlson, 2003) and lower levels of the impulsivity speculatively linked to over-endorsement of SM items—did not have lower SM scores than the other participants. This group has been described as playing a passive, "observer" role in interactions in childhood and adolescence, and it seems antithetical that young men with ADHD-IA would be able to self-monitor effectively. First, it seems possible, again, that both ADHD-IA and ADHD-C

participants may have self-protectively overestimated their ability to self-monitor, which, at least in initial interactions, can be socially advantageous. In addition, the social "pull" for matching in the SRSIP may not have been strong enough to truly test for differences in SM. The male participants met with the male author who was substantially older and was an "authority" figure (i.e., the experimenter). This contrasts with the procedure used in prior research (e.g., Downey & Feldman, 1996, Study 2) in which more negative emotions were observed in high RS (versus low RS) participants during an experimental interaction with an *opposite sex confederate* giving negative or ambiguous responses. Perhaps, due to these salient task differences, the SRSIP may not have equally tapped the SM construct amongst the comparison groups. One necessary component of SM is perceptive (i.e., noticing a social partner's differences), whereas another is motivational (i.e., wanting to change one's self presentation to maximize social acceptance). It is possible that all participants had similar perceptions of the discrepant preferences of the experimenter, but perhaps only the ADHD-IA group, primed by years of being "sidelined" socially, interpreted the active conversation with the experimenter as a "social" opportunity that could possibly lead to future interactions, hence activating SM.

Negative affect following the in person SRSIP interaction between the participants and the experimenter was proposed as potential measure of elevated RS. Participants' Negative Affect Scale (NAS) scores seems to provide support for the hypothesized group differences on RS, with both the ADHD groups indicating significantly higher levels of negative affect during the SRSIP as compared to their non-diagnosed peers. In this interpersonal interaction, the ambiguous feedback of the

experimenter's divergence from the participants' occupational values may have invoked thoughts of anticipated rejection in the ADHD participants. However, an ANCOVA controlling BDI scores did not produce significant group effects. While the NAS data did not meet the established assumptions for this post-hoc *F* test, this nonetheless suggests that the higher levels of "baseline" depressive symptoms experienced by participants with ADHD influenced this finding. In addition, it is noteworthy that these "elevated" scores of the ADHD groups were still not out of a normal range for state negative affect (i.e., "in-the-moment" feelings), as established by Watson and colleagues (1988) for a college sample (see Figure 4). This observation suggests that the control participants may simply have felt more comfortable in the laboratory setting of the study, rather than the ADHD groups exhibiting a truly anxious response that would be characteristic of high RS.

These speculations still do not explain why the ADHD groups did not substantively differ from the non-diagnosed participants on the standardized measure of RS. How could a population that experiences widespread peer rejection in childhood not manifest higher RS? Perhaps this reflects an adulthood manifestation of the social, self-protective bias that has been documented in children with ADHD (Ohan & Johnston, 2002; Hoza et al., 2000; Diener & Milich, 1997) and is related to the overestimation of ability in performance (Milich & Okazaki, 1991) and social tasks (Hoza et al., 2002). This prior research suggests that ADHD children who are rejected by their peers are unlikely to register their high degree of impairment in peer relations. Extended developmentally, young adult men with ADHD may underestimate the likelihood of rejection in social situations, and consequently not feel anxious enough about other's

reactions to register higher RS. This could also explain why the ADHD-C group did not report higher RS than the ADHD-IA group; only if one perceives a social slight would an unmodulated emotional response occur (more common in the ADHD-C group; Hinshaw & Melnick, 1995), and subsequently one would have to realize and incorporate the social consequence of the outburst to then feel anxious about future social interaction. Therefore, while Mrug and colleagues (2001) point out that a social, self-protective bias may prove detrimental to the long-term acquisition of socially appropriate behavior, the current findings seem to suggest that a benefit of this bias might be the prevention of elevated RS.

Buffering Effects of RS for Negative Relational Outcomes

As hypothesized, buffering effects of low RS were noted, based on results of regression analyses, for several romantic relational variables in this study. For all participants currently in dating relationships (39% of sample), lower RS predicted a higher frequency of actual dates with the romantic partner, accounting for a fifth of the variance. On average, high RS daters (n = 11) reported dating less than once a week, whereas those low in RS (n = 19) indicated dating at least once a week, despite there being no substantial difference between these two groups on involvement in long-distance relationships (27% and 21%, respectively). This suggests that, even amongst those with "established" romantic partners, those with high RS are comparatively reluctant to go on frequent dates, presumably because they still perceive a higher threat of rejection. Perhaps the high RS men in this sample, demonstrated by fewer dates, also felt less committed to their relationships; these couples may have been headed toward

dissolution, as was found to be more likely in a one-year period in the study by Downey and colleagues (1998), as compared to couples without a high RS man.

Apart from frequency of dates, the pattern of RS's effect on romantic outcomes varied substantially between the groups. Low RS predicted earlier and more committed dating in the ADHD-IA group, a higher degree of success in initiating dating (within the past year) in the non-diagnosed control group, and earlier (and more varied) sexual experience in both of these groups. In addition, the ADHD-IA participants with low RS were more likely to currently be in a dating relationship and less likely to be dissatisfied with the quantity of their current dates, as compared to their high RS ADHĐ IA peers. These results, again, make theoretical sense given the tendencies of those with low RS. The unexpected pattern, however, was that in the ADHD-C group low RS was associated with *later* dating as well as *less*success in datin g initiation. In sum, it seemed that low RS was somewhat of detriment to the romantic outcomes of those in the ADHD-C group, whereas in the other groups there was evidence of a buffering effect for low RS.

What, then, could account for this unusual effect of RS in the ADHD-C group? It has been previously noted that the ADHD-C group, when compared to ADHD-IA participants, had a higher investment in (i.e., desire for) romantic relationships. For those high in RS, this is likely indicative of a coping style, albeit a maladaptive one, to stave off rejection by seeking to secure "unconditional love" (Downey et al., 2000). Consequently, those in the ADHD-C group with high RS and elevated romantic relational investment could reasonably be expected to have actively pursued secure, romantic relationships from an early age. When combined with the impulsivity inherent to ADHD-C, which

might effectively water down an adolescent's hesitance to initiate dating, this could account for the early dating in the high RS ADHD-C subgroup.

The clinically-elevated impulsivity of the ADHD-C participants may also, at least partly, explain the high success in dating initiation reported by the high RS members of this group. Downey and colleagues (1997) suggest that high RS individuals preoccupied with securing "unconditional" romantic relationships may selectively initiate relationships only with partners who express neediness or demonstrate immediate willingness to commit to a relationship. If this tendency is more characteristic of this ADHD-C subgroup, it may effectively "put on the brakes" for these men in situations where they may otherwise blurt out a dating attempt in conversation with a partner who is unlikely to accept. Low RS men with ADHD-C may impulsively attempt dating with partners either of a "too high" a standard or those without a high desire to jump headlong into a relationship, consequently suffering a higher rate of rejection.

Also left to explain is the finding of no significant negative association between RS and self-reported relational satisfaction, which contrasts with the prior research of Downey and Feldman (1996, Study 4). The current sample was equivalent to theirs on demographic variables such as relationship duration, age, ethnicity, and educational attainment. In addition, although Downey and Feldman used a different measure of relationship satisfaction, other research (Spanier, 1976; Fisiloglu & Demir, 2000) has found high correlations between their measure and the LWMAT used in the current study.

It also seemed plausible that the large proportion of participants with ADHD in this study skewed the RS-relational satisfaction relationship away from that noted in samples not selected for ADHD (e.g., Downey et al., 1997). A closer examination, however, did not show this to be the substantially the case; the correlation between RS and the self-reported LWMAT score for just the romantically-active men with ADHD (n = 21) was -.34 (as compared to r = -.45 reported in Downey & Feldman, 1996). In contrast, the correlation between RS and relational satisfaction in the small (n = 9) group of romantically active control participants was .44. It is possible that in a group of this size that just a few aberrant responders could dramatically skew a correlation. Indeed, two non-diagnosed participants who had among the highest self-rated LWMAT score (73rd and 100th percentile in this sample) were in the high RS range, and another who had low relational satisfaction also reported very low RS (9th percentile). However, with these participants excluded from the analysis, the RS-LWMAT correlation for the remaining control group was still .13. While the cause of this unexpected finding in the non-diagnosed controls is open to speculation, it seems clear that it drives the overall result of an insubstantial relationship between RS and self-reported relational satisfaction.

Friendships

Friendships represent a meaningful source of social support that potentially play a buffering role against numerous negative long-term outcomes (Bagwell et al., 2001). Several researchers (Mrug et al., 2001; Frankel & Myatt, 2003) have asserted that, while ADHD children experience substantial rejection by their peers, interventions that focus on improving the quality of the friendships they do manage to establish are a promising

direction for improving social adjustment. However, the existent body of knowledge has focused primarily on the question of simple sociometric status of ADHD boys, with very few studies examining the quality of their friendships. The relational patterns noted by Henker and Whalen (1999) suggested that socially "reluctant" individuals with ADHD-IA may have more difficulty in forming meaningful relationships as compared to those without ADHD and even their peers with ADHD-C, who tend to be more socially active (if also "maladroit").

The results of this study tentatively support this hypothesis, with the ADHD-IA group indicating lower perceived support from their network of friends (versus non-diagnosed control participants). While this trend was nonsignificant, the difference between these two groups was medium-sized. Generally, this finding is more telling given that no differences were noted between the comparison groups on the gross amount of contact with friends (incorporating both number of friends and the frequency of their interaction). In other words, despite the fact that participants with ADHD-IA had an equivalent level of interaction with friends, they felt less support from these contacts. This suggests that, as in childhood, these individuals may play more of an observer role when socializing, perhaps eliciting fewer supportive statements and actions from friends. Of course, this is speculative, given that no observations or solicitation of further details of interactions amongst friends were included in the current study.

Romantic Relationships

As with friendships, very little prior research has targeted the romantic relationships of adults with ADHD. Keeping with the childhood differences in social

style described by Henker and Whalen (1999), as well as the findings from Canu and Carlson's (2003) recent study, the ADHD-IA group reported a lower amount of investment in establishing romantic relationships, as compared to the ADHD-C group (a medium effect size). This finding supports the contention that the social behavior patterns established in childhood within these groups do persist into adulthood, with young men with ADHD-IA ("reluctant/avoidant") continuing to prefer a more standoffish approach regarding relationships than their ADHD-C peers ("active/maladroit"), who desire a higher degree of social contact. However, further research is necessary to establish how and to what extent the behavioral patterns of children with ADHD in peer contexts map onto their subsequent adult relationships. This is especially true for romantic relationships, as these include expectations of a very different nature (e.g., sexual and personal intimacy, sharing of resources) that may be more or less difficult to fulfill for adults with ADHD.

Building upon the limited, relevant findings that were available (Weiss et al., 1985; Biederman et al., 1993; Murphy & Barkley, 1996), it was also hypothesized that the active daters in the ADHD groups (27% of ADHD-IA group, 48% of ADHD-C) would have lower self- and partner-rated relational satisfaction as compared to control participants (38% of whom were dating). Although the findings did not support this hypothesis, differences between the ADHD groups were suggested by a nonsignificant trend for ADHD-IA individuals to have both lower partner- and self-reported relational satisfaction, as compared to their ADHD-C peers. The effect size difference between these groups was large on the self-report LWMAT measure. Taken with the finding of

lower reported support (versus controls) from close friends, this suggests that the ADHD-IA group may suffer a more general malaise or dissatisfaction in adult relationships. As speculated regarding their friendships, perhaps the ADHD-IA individuals, through lower social engagement, derive and facilitate fewer opportunities for satisfying, meaningful interaction with their romantic partners.

It was further hypothesized that the ADHD-C group would report a greater number of lifetime romantic partners as compared to their ADHD-IA and non-diagnosed peers, and that the ADHD-C group would report the shortest mean duration of romantic relationships amongst the three groups. Partial support was garnered for the former, with the ADHD-C group having had romantic relationships with, on average, approximately nine women, versus the four reported by their non-diagnosed peers (a large effect size). This corresponds with the finding of higher investment (i.e., motivation) in establishing romantic relationships (as compared to the ADHD-IA group). Further, previous research has indicated that low self-restraint and high misconduct in peer-rejected children are positively associated with number of sexual partners in adolescence (Feldman, Rosenthal, Brown, & Canning, 1995); such an effect could well have facilitated increased, early romantic opportunities for this ADHD-C group with a high rate of disruptive behavior (i.e., ODD and CD). It is also possible that these young men might simply impulsively terminate and move into new relationships more often than most.

Interestingly, the ADHD-IA group also reported significantly more lifetime dating partners than controls (approximately seven, a difference of medium size), which was unexpected. This does not keep with the suggested pattern of individuals with ADHD-IA

being reluctant to initiate heterosocial conversations (Canu & Carlson, 2003) or being generally more socially withdrawn (e.g., Henker & Whalen, 1999). An examination of participants reporting a very low (i.e., 0-1) number of romantic partners indicated this was more common in the control (n = 7) than the ADHD-IA group (n = 2), but that almost all of the non-diagnosed "limited-variety" daters reported an understandable rationale for not dating more widely (e.g., "personal reasons," to concentrate on schoolwork, happy in their one and only relationship). While this was also the case for one of the limited-variety ADHD-IA participants, this nonetheless seems to indicate that the unexpected difference between the control and ADHD-IA groups was at least partly driven by the relatively higher number of non-diagnosed participants who were "inexperienced" but more or less satisfied with their dating pattern in this domain.

Contrary to expectations, the comparison groups were not differentiated by the mean duration of their romantic relationships. Interestingly, however, the ADHD-C group reported a higher proportion of time spent in romantic relationships (50% since the onset of dating) as compared to the ADHD-IA group (35%; medium effect size). The ADHD-C group's reports were marginally higher (i.e., $p < .10$) than their non-diagnosed peers, as well (37%; also a medium effect). Overall, these combined results seem to suggest that young men with ADHD-C, while exhibiting the highest degree of DSM-IV symptomatology, do not suffer appreciable impairment in establishing and maintaining subjectively satisfying romantic relationships. In contrast, whereas those in the ADHD-IA group also did not differ from controls on the overall amount of relational experience during their dating careers (and actually reported dating more women), they, and their

partners, experience a lower degree of satisfaction in these relationships (as compared to their ADHD-C peers).

While not subsumed in the a priori hypotheses for this study, sexual milestones composite scores were examined post-hoc to compare the groups' broad, lifetime adjustment in the sexual domain. Analyses revealed that the ADHD-C group had earlier and broader experience as compared to both the non-diagnosed and ADHD-IA groups (medium and nearly-large effect sizes, respectively). This was anticipated given prior findings of higher sexual drive in young men with ADHD-C (Canu & Carlson, 2003) and the previously mentioned research by Feldman and colleagues (1995). When examined at the item level, this seemed to be primarily driven by timing on less "advanced" behaviors (e.g., for kissing, ADHD-C: 14.9 years old at first experience (94% responded affirmatively), ADHD-IA: 15.7 (91%), NC: 16.2 (88%)) and by experience on more advanced behaviors (e.g., for vaginal sex, ADHD-C: 17.3 years old at first experience (77% responded affirmatively), ADHD-IA: 17.5 (59%), NC: 18.3 (63%)).

Self esteem

Results from the current study are consistent with prior research establishing self-esteem deficits in both adults (e.g., Hechtman et al., 1980, Weiss et al., 1985) and children (see review in Barkley, 1996) with ADHD, with members of both ADHD groups reported lower self-esteem than the non-diagnosed controls. The relative difference corresponded to a large effect size between the control and ADHD-C participants, whereas a medium effect was observed when comparing controls and the ADHD-IA group. These robust differences are particularly striking when considering that the

individuals in these ADHD groups reported equivalent (or "better") outcomes in romantic relationships, demonstrated a relatively high degree of adaptation in the academic domain (i.e., in the select group of those with ADHD who go on to attend college), and did not differ from controls on key variables such as estimated IQ and socioeconomic status. The deficit of the ADHD-C group is even more noteworthy given their equivalent amount of perceived support from current friendships, as compared to the control group. Further investigation is needed to specifically examine whether the cumulative feedback from negative relationships in childhood and adolescence or other factors (e.g., early academic difficulties) account for the toll in self-perception noted even on those adults with ADHD with the relatively positive outcomes of this college sample.

BLIRT

Blirtatiousness is defined by Swann and Rentfrow as "the extent to which people respond to others quickly and effusively" (2001, p. 1160). It was hypothesized that differences on this measure would emerge between those with ADHD-C, who, in childhood, are categorized as socially overactive (Henker & Whalen, 1999), and those with ADHD-IA, who have as adults been observed to react less effusively in a heterosocial interaction (Canu & Carlson, 2003). However, the results did not bear out this hypothesis, as no significant group differences emerged. A modest correlation was noted between BLIRT scores and both the current, self-reported hyperactive-impulsive and inattentive score on the CAARS, corresponding closely to the correlation noted by the scales authors to another measure of impulsivity. These collectively suggest that,

while somewhat related to ADHD symptomatology, blirtatiousness does not differ dramatically between those with and without ADHD or between the ADHD subtypes.

Summary and Implications

Results that would be indicative of abnormal levels of rejection sensitivity (RS) were not detected in any of the comparison groups, although more negative affect was reported by the ADHD participants, as compared to non-diagnosed peers, during the ambiguous experimenter-participant SRSIP interaction. This was likely influenced, however, by pre-existing differences in depressive affect. It is suggested that the self-protective tendencies (i.e., reduced notice and incorporation of rejection and overestimation of competency) that have been documented in prior research on childhood ADHD may influence the expression of RS in this population, and that the control participants felt more at ease in the experimental setting. Evidence contrary to the predicted lower SM in the ADHD groups (as compared to non-diagnosed participants) was found, with the ADHD-C group reporting a trend of higher SM on a self-report measure and the ADHD-IA participants showing a higher amount of change toward the experimenter on targeted MOI items during the SRSIP. However, close consideration of these measures raises questions about potential over-endorsement of self-reported SM by ADHD-C participants and whether the in-vivo SRSIP situation fully tapped SM in all participants, suggesting these findings of higher SM in the ADHD groups may not be very robust. Replication of the results with modified measures (e.g., Self-Monitoring Scale without items that could relate to chronic, impulsive social behavior; in-vivo measure with a female confederate) would be necessary to confirm these differences.

Even so, it was unexpected that those with ADHD would report levels of SM reaching equivalence with the non-diagnosed controls. Overall, it does not appear, despite the likely childhood rejection and definitive characteristics (i.e., inattention, hyperactivity-impulsivity) associated with ADHD, that RS or SM distinguish young adult males with ADHD from their non-diagnosed peers.

Despite these general findings, interesting differences were noted on the buffering effect of RS on romantic relational outcomes. While both the non-diagnosed control and ADHD-IA groups showed a pattern of low RS predicting better relational outcomes, the converse was detected for the achievement of dating milestones and current success at dating initiation for the ADHD-C group. Other research has suggested that those in high RS groups may be more prone to the tendency to seek out "needy" partners or those who are very ready to commit in romantic relationships. In the high RS, ADHD-C subgroup, this may serve as a counterbalance to natural impulsivity, engendering a sort of "check" against indiscriminant, spontaneous attempts to initiate dating with partners who would respond negatively.

It is also of interest that a previously established relationship between low RS and high satisfaction in romantic relationships was not detected in the romantically-involved segment of this sample. It was initially thought the over-representation of individuals with ADHD in the current sample was a confound that influenced this correlation. However, further examination of the data indicated that the negative association between RS and self-reported relational satisfaction in the ADHD groups was roughly the same magnitude as documented in prior research and that, unexpectedly, the driving factor for

the overall insubstantial finding was a positive relationship between the RS and self-reported LWMAT scores in the very small subgroup of currently dating non-diagnosed control participants.

The two ADHD groups were distinguished from each other by several differences on both romantic relational and friendship outcomes. The ADHD-IA group reported lower perceived support from friends (relative to non-diagnosed participants), lower self- and partner-rated romantic relational satisfaction, and a lower proportion of time spent in a romantic relationship since their onset of dating in adolescence (both as compared to the ADHD-C group). The ADHD-C group also reported marginally more time in romantic relationships and having dated significantly more women than controls. This corresponds with the higher investment in romantic relationships noted for the ADHD-C group (as compared to ADHD-IA peers). Further, the ADHD-C group reported earlier and more varied sexual experience than both their ADHD-IA and non-diagnosed peers. Interestingly, the ADHD-IA group also reported having dated more women than the control group, although trends amongst those having dated the least women (i.e., < 2) within these groups suggest this latter statistical difference may not be that meaningful. Overall, though, these results, along with the finding previously noted regarding romantic relational investment, provide some evidence that the childhood patterns of individuals with ADHD-C being more socially active and those with ADHD-IA being more withdrawn, reluctant, and ignored by peers do carry over into adult relationships, and that those with ADHD-IA may be more at risk for negative social outcomes than their ADHD-C peers.

Self-esteem has elsewhere been shown to be negatively associated with ADHD, and this was replicated in this study. This was notable given the generally high level of adaptation of this ADHD sample, the lack of group demographic differences, and the often equivalent levels of "success" in romantic relationships, and was particularly striking for the ADHD-C group that reported a similar level of support from friends as compared to controls. Neither ADHD group differed from the control participants on blirtatiousness, which corroborates the prior definition of this construct as only minimally related to impulsivity.

In sum, these results contribute to the body of knowledge regarding long term outcomes of individuals with ADHD, and particularly their ill-studied adult social experience. While group differences on the standardized measures of SM and RS did not emerge, the specific findings regarding buffering effects of RS distinguished the two subtypes of ADHD studied here. In addition, further evidence was garnered that the social behaviors and outcomes of those with ADHD-C and ADHD-IA differ, although much work remains to adequately document how the manifestation of adulthood ADHD directly affects their relationships, particularly those of a romantic nature. This work also extends the literature on the buffering effects of RS to a clinical population, which, to the author's knowledge, has not previously occurred.

Limitations

There are several notable limitations to this study that should be weighed considerably in the interpretation and generalization of the findings. The sample size was small, limiting the power to detect differences between groups. Relatedly, the number of

participants who were currently in romantic relationships was slightly lower than expected, further reducing statistical power and somewhat limiting the flexibility of data analysis (e.g., making multiple regression ill-advised on two relational variables). Further, the proportion of romantic partners returning study questionnaires was lower than in prior, similarly structured research (e.g., Canu & Carlson, 2003), making these comparison groups extremely small. Results derived from the dating partner's responses should probably be considered as pilot data (i.e., suggestive of meritorious directions for follow-up studies).

As previously discussed, both the in-vivo SRSIP and Self-Monitoring Scale (SMS) measures may have had elements that confounded accurate assessment of SM. In addition, due to the structure of the procedure (completed exclusively by the author), there was no blind as to participants' group status at the data collection session. Further, small, nonsignificant correlations were noted between the self- and partner-reported RS and SM, which is a bit troublesome. However, while the SMS and the Rejection Sensitivity Questionnaire have been rigorously normed and used as self-report measures, to the author's knowledge they have not been previously used by romantic partners to estimate participants' SM and RS, so it is unclear as to what degree of correlation would reasonably be expected between these ratings by the "beholder" and the "beholden."

ADHD status in this study was determined by self-reports of a previous diagnosis of ADHD and by a structured telephone interview between participants and the experimenter. Further diagnostic information was gathered via self-report questionnaires. These criteria fall below a stringent standard that would be applied in many clinical

settings; however, researchers have provided evidence that ADHD self-reports have high discriminant validity (De Quiros & Kinsbourne, 2001) and high concurrence with knowledgeable informant (e.g., parent and romantic partner) ratings (Murphy & Schachar, 2001).

Within these parameters, however, participants included in the ADHD groups met the established DSM-IV criteria for symptom expression and impairment. A different criterion was used regarding age of onset; whereas the DSM-IV specifies that clinically-significant symptoms must be present before the age of 7, we accepted a report of symptoms preceding 12 years of age, a cutoff that others have shown to yield similar levels of impairment to the younger, DSM-IV version (Barkley & Biederman, 1997). Finally, participants who reported comorbid conditions (e.g., ODD, CD, depression, anxiety) were not excluded unless it seemed clear that upon interview that these conditions were what drove the ADHD symptoms. Comorbidity was not controlled for in statistical analyses; it is so common to the clinical presentation of ADHD that it was assumed that comorbidity would not detract from detecting "real world" differences between the ADHD subtypes and a non-diagnosed comparison group.

As it should be abundantly clear, the research base regarding childhood ADHD is much more thoroughly established than for the affected adult population. It is still a source of some debate whether the strictly defined DSM-IV symptoms of childhood ADHD directly correspond to the expression of ADHD in young adulthood and beyond. Some of the interpretations of this study's findings extrapolate primarily from research in childhood populations (e.g., that children with ADHD-IA are more passive in

naturalistically observed relationships). Such assertions should be tempered with this general caveat in mind.

The current research drew participants exclusively from higher educational settings, although this sample is more diverse than some (i.e., included community college students and is not composed primarily of introductory psychology students). Accordingly, the participants with ADHD are likely more "high-functioning" (i.e., are attending college) than many with this disorder, and thus these results may not be fully representative of the entire ADHD population. One could speculate that academic achievement, itself, could facilitate better social outcomes for adults with ADHD, although this was not directly assessed in this study and would contrast with previously cited research regarding the acceptance of children with this disorder (e.g., Erhardt & Hinshaw, 1994).

Finally, several measures of dating and sexual experience have been conceptualized in this study as having positive or negative valences depending on timing or breadth. However, early sexual experience, for example, is certainly not an unambiguously positive event. Younger sexual partners may be more likely to have unprotected sex that could result in pregnancy or a sexually transmitted disease. Similarly, a higher rate of involvement in romantic relationships could be a sign of robust social skill and comfort, but could equally be born of dependence on having a partner to maintain self-esteem or meet other needs. The findings regarding adjustment in dating and sexual domains should be interpreted with this caveat in mind.

Future Directions

Several future directions are suggested by the current study and the general state of the literature in the domain of long-term social outcomes of individuals with ADHD. This study lacked observational data of ADHD participants interacting in a "friend" or "dating" role; further studies that collect such information would help to clarify whether the suppositions made from the data hold true (e.g., that men with ADHD-IA are more withdrawn in interactions with romantic partners and friends), and could yield further qualitative information regarding the interactional styles of adults with ADHD. For example, conversations could be experimentally facilitated between adults with ADHD and their romantic partners focusing on communicating needs or desires for change in the relationship. Follow-up contacts could then track how many and how consistently these were addressed by those with ADHD, as compared to a non-diagnosed control group, and what effects this had on the relationship. In general, more experiential data (versus traditional "paper-and-pencil" measures) is needed for a detailed picture of the nature of the development and maintenance of relationships in those with ADHD, and how the cognitive and behavioral characteristics of the disorder affect. As another example, the self-protective bias that has been noted in children with ADHD is invoked here several times as a means to explain results. However, it remains to be established experimentally whether this bias actually does carry over into adulthood.

It would also be meaningful to explore how functional—or dysfunctional, as the case may be—relationships influence the emotions and behaviors of adults with ADHD. In addition, negligible data has been gathered to date pertaining to how others (i.e., romantic partners, friends, workmates) perceive adults with ADHD, or how their

personality or other interpersonal qualities may effect the outcome of relationships with an individual with ADHD. Research to explore these various topics may yield important perspective on gauging the cross-situational social outcomes associated with this common disorder.

ADHD researchers have long drawn upon findings from the biological, cognitive, developmental, and evolutionary psychology domains to better understand the ADHD phenomenon. However, it is this author's observation that relatively few constructs stemming from the social psychological literature have been applied to ADHD research, which seems ill-informed given the chronic interpersonal difficulties that are tend to co-occur. While RS and SM did not appear in this study to manifest differently within the ADHD population (i.e., distinguish those with and without ADHD), it would be worthwhile to examine how some of the other "candidate" mediators of social behavior, such as attachment, personality, self-appraisal, level of trait aggression, ability to delay gratification, and style of love, impact the outcomes of those with ADHD. Finally, as with all research, it would also be productive to replicate this study in an independent sample (particularly with the modifications suggested above for the SM and SRSIP measures), as well as revisit these and similar hypotheses in female, non-heterosexual, and non-college populations to determine the extent to which the current findings are generalizable.

Tables and Figures

Table 1
Demographic and Descriptive Characteristics of Sample

	NC *n* = 24	ADHD-C *n* = 31	ADHD-IA *n* = 22
Age (years)	20.8 (1.4)	21 (1.9)	21.1 (1.3)
SES (family)	60.3 (21.8)	67.7 (17.8)	66.6 (12.8)
Education	2.0 (1.4)	1.8 (1.3)	2.6 (1.2)
FSIQ estimate	104.2 (10.8)	105.5 (11.6)	105.6 (8.3)
Childhood ADHD			
IA symptoms	1.1 (1.7)[a]	8 (1.1)[b]	7.6 (1.2)[b]
HI symptoms	1.3 (1.4)[a]	7.9 (1.1)[c]	3.7 (1.4)[b]
Impaired domains	--	3.8 (1)	3.3 (1.2)
Est. onset (years)	--	6.7 (1.9)	8.1 (2.3)
Adulthood ADHD			
IA symptoms	0.7 (1.1)[a]	6.9 (1.8)[b]	6.8 (1.9)[b]
HI symptoms	1.0 (1.3)[a]	6.2 (2.1)[c]	3.4 (1.8)[b]
Impaired domains	--	4.5 (2.4)	4.5 (1.9)
CAARS IA *T*-score	48.9 (9.5)[a]	79.4 (11.3)[b]	79.9 (8.7)[b]
CAARS HI *T*-score	46.5 (8.2)[a]	72.6 (12.8)[c]	57.5 (11.7)[b]
WURS	13.5 (9.3)[a]	52.9 (14.9)[c]	41 (11.6)[b]
BDI	3.1 (3)[a]	6.7 (5.2)[b]	8.6 (7.6)[b]
BAI	4.8 (4.8)[a]	12.8 (9.7)[b]	10.3 (10.3)[b]
CD history	4%	31%	9%
ODD history	0%	44%	41%
ADHD dx by			
Psychologist	--	34%	50%
Psychiatrist	--	34%	41%
Other doctor	--	18%	0%
School counselor	--	0%	9%
Other professional	--	14%	0%
Treatment?			
Medication alone	0%	53%	45%
Therapy alone	8%	6%	9%
Combination	4%	28%	27%

Note. Superscripted letters indicate pairwise differences of at least $p < .05$. "SES" = socioeconomic status (higher of maternal and paternal vocation in past year using Stevens & Featherman, 1981). "FSIQ" = Full Scale IQ. "ADHD" = Attention-Deficit/Hyperactivity Disorder. "IA" = Inattentive. "C" = Combined subtype. "NC" = non-diagnosed control. "HI" = Hyperactive. "CAARS" = Conners Adult ADHD Rating Scale. "WURS" = Wender Utah Rating Scale. "BDI" and "BAI" = Beck Depression and Anxiety Scales. "CD" = Conduct Disorder. "ODD" = Oppositional Defiant Disorder. "Dx" = diagnosis. "Treatment?" = history of psychological intervention by self-report.

Table 2

Composite Variables:Definitions and Calculations

Variable and Definition	Calculation
Dating milestones composite (dmilecom): An index of both breadth and timing of dating experience, with lower scores indicating more and earlier experience. Range = 2.56 – 18 (was not scorable for 3 participants with no prior dating experience).	(1 / # of dating milestones reached) * average age dating milestones were reached
Sexual milestones composite (sxmilcom): An index of both breadth and timing of sexual experience, with lower scores indicating more and earlier experience. Range = 1.42 – 8.5 (was not scorable for 5 participants with no prior sexual experience).	(1 / # of sexual milestones reached) * average age sexual milestones were reached
Time in romantic relationships (tinrelat): Percentage of time spent in romantic relationships controlling for timing of dating initiation. Range = 0 – 100.	[(average relationship length * number of partners) / (current age – age at first date)] * 100
Percentage of success in initiating dating (sucratio): Percentage of attempts asking out different women that were successful, in the past year. Range = 0 – 100 (was not scorable for 7 participants who did not attempt to date in past year).	(number that agreed to date / number that were asked to date) * 100
Average length of romantic relationships (avlength): Mean length of all romantic relationships, including current relationship (as appropriate). Range = 0 – 36.	(sum of lengths of relationships in months)/number of relationships reported
Index of friends' day-to-day presence (frndpres): overall presence of close friends in participant's life (in terms of frequency of contact). Range = 0 – 108.	Number of close friends * average contact frequency (7-point scale)

Table 3

Group Means (Standard Deviations) for Self-report Questionnaire Variables

	NC *n* = 24	ADHD-C *n* = 31	ADHD-IA *n* = 22
RS self-report	9.56 (2.56)	9.88 (3.42)	9.72 (3.4)
SM self-report	13.21 (4.37)[a*t*]	15.29 (4.32)[b*t*]	13.41 (4.26)
IM score	5.33 (3.13)	4.1 (2.43)	4.77 (3.05)
# of women dated	4.12 (3.46)[a]	8.74 (6.03)[b]	6.68 (4.84)[b]
time in relationships (%)[1]	36.5 (26.25)[a*t*]	50.05 (27.01)[b]	34.82 (21.37)[a]
average relationship length (months)[1]	7.8 (8.82)	4.81 (3.66)	4.63 (4.18)
# of women asked to date in last year[1]	1.75 (1.36)	2.85 (3.70)	3.18 (3.86)
dating initiation success, past yr (%)[1]	84.13 (32.69)	89.96 (26.49)	88.04 (18.95)
dating milestones composite[1, 2]	5.31 (4.08)	4.39 (2.55)	4.58 (1.6)
sexual milestones composite[1, 2]	2.41 (1.5)[b]	1.84 (.32)[a]	2.93 (1.97)[b]
amount of contact with close friends[1]	31.01 (20.11)	34.85 (22.25)	31.69 (24.52)
friend support scale	4.3 (.58)[b*t*]	4.17 (.90)	3.86 (1.04)[a*t*]
self-esteem	5 (1.38)[b]	3.52 (1.77)[a]	4.05 (1.56)[a]
investment index[#]	6.42 (1.79)	6.87 (1.63)[b]	5.91 (1.38)[a]
BLIRT score	24.42 (2.65)	25.84 (3.63)	25.18 (3.18)
self-rated LWMAT	<u>*n* = 9</u> 114.23 (23.47)	<u>*n* = 15</u> 116.29 (25.07)[b*t*]	<u>*n* = 6</u> 95.27 (23.3)[a*t*]
frequency of dates in relationship	3.89 (1.17)	4.27 (1.71)	3.17 (1.72)

Note. [1] = see Table 3 for full explanation of this composite variable. [2] = lower scores equate to earlier and broader experience. Superscripted letters indicate pairwise differences of at least $p < .05$, except if a [*t*] follows the superscript, in which case the difference is at the "trend" level ($p < .10$). "ADHD" = Attention-Deficit/Hyperactivity Disorder. "IA" = Inattentive. "C" = Combined subtype. "NC" = non-diagnosed control. "RS" = rejection sensitivity. "SM" = self-monitoring. "IM" = Impression Management scale on the *Balanced Inventory of Desirable Responding* (Paulhus, 1988). [#] = ADHD-C group *n* = 30 due to omission by one participant. "BLIRT" =*Brief Loquaciousness and Interpersonal Responsiveness Test* (Swann & Rentfrow, 2001). "LWMAT" = *Locke-Wallace Marital Adjustment Test* (Locke & Wallace, 1959).

Table 4

Group Means (Standard Deviations) on Romantic Partners' Questionnaire Measures

	NC	ADHD-C	ADHD-IA
	n = 4	*n* = 4	*n* = 4
participant's RS	12.73 (4.3)	12.67 (7.83)	10.34 (1)
participant's SM	9.75 (6.08)	12.25 (3.4)	13.75 (7)
partner's LWMAT	124.75 (17.5)	131 (17.32)[bt]	98.29 (26.36)[at]

Note. Superscripted letters followed by a [t] following indicate differences at the "trend" level ($p < .10$). "ADHD" = Attention-Deficit/Hyperactivity Disorder. "IA" = Inattentive. "C" = Combined subtype. "NC" = non-diagnosed control. "RS" = rejection sensitivity. "SM" = self-monitoring. "LWMAT" = *Locke-Wallace Marital Adjustment Test* (Locke & Wallace, 1959).

Table 5

Group Means (Standard Deviations on In-vivo (SRSIP) Measures

	NC *n* = 24	ADHD-C *n* = 31	ADHD-IA *n* = 22
NAS during SRSIP	10.79 (1.35)[a]	14.35 (4.64)[b]	15.23 (5.9)[b]
Ratio of SM to non-SM change[1]	1.09 (1.34)	.94 (1.37)	1.14 (1.05)
Average SM change[1]	.27 (.62)[a]	.43 (.5)	.77 (.77)[b]

Note. [1] = see Table 5 for full explanation of this composite variable. "Ratio of SM to non-SM change" = ratio of change from time 1 to time 2 on manipulated vs. unmanipulated SRSIP variables. "Average SM change" = average amount of change *toward* the experimenter's preferences (i.e., potential self-monitoring) on manipulated SRSIP variables. Superscripted letters indicate pairwise differences of at least $p < .05$. "ADHD" = Attention-Deficit/Hyperactivity Disorder. "IA" = Inattentive. "C" = Combined subtype. "NC" = non-diagnosed control. "NAS" = Negative Affect scale on the *Positive Affect Negative Affect Scale* (Watson et al., 1988). "SRSIP" = Self-monitoring/Rejection Sensitivity Induction Procedure.

Table 6

Chi-square Analyses on Dating Variables between High and Low RS ADHD Subgroups

	ADHD-Combined Subtype			ADHD-Primarily Inattentive		
Variable	Low RS	High RS	χ^2	Low RS	High RS	χ^2
Relationship?						
N	7	9		7	9	
	(23%)	(29%)	.82	(32%)	(41%)	5.71*
Y	9	6	$p > .10$	6	0	$p = .02$
	(29%)	(19%)		(27%)	(0%)	
Date more?						
N	6	5		7	1	
	(20%)	(17%)	.14	(32%)	(5%)	4.20*
Y	9	10	$p > .10$	6	8	$p = .04$
	(30%)	(33%)		(27%)	(36%)	

Note. RS = rejection sensitivity. "High" and "Low" RS were determined by assigning individuals based on the study sample mean (= 9.73) Numbers in parentheses = percentage of overall ADHD group (e.g., ADHD-C or– IA). Total $N = 30$ for ADHD-C group on "Date more?" because one participant omitted this response. "Relationship?" = "Are you currently in a romantic (dating or more serious) relationship?" "Date more?" = "Would you like to date more frequently?"

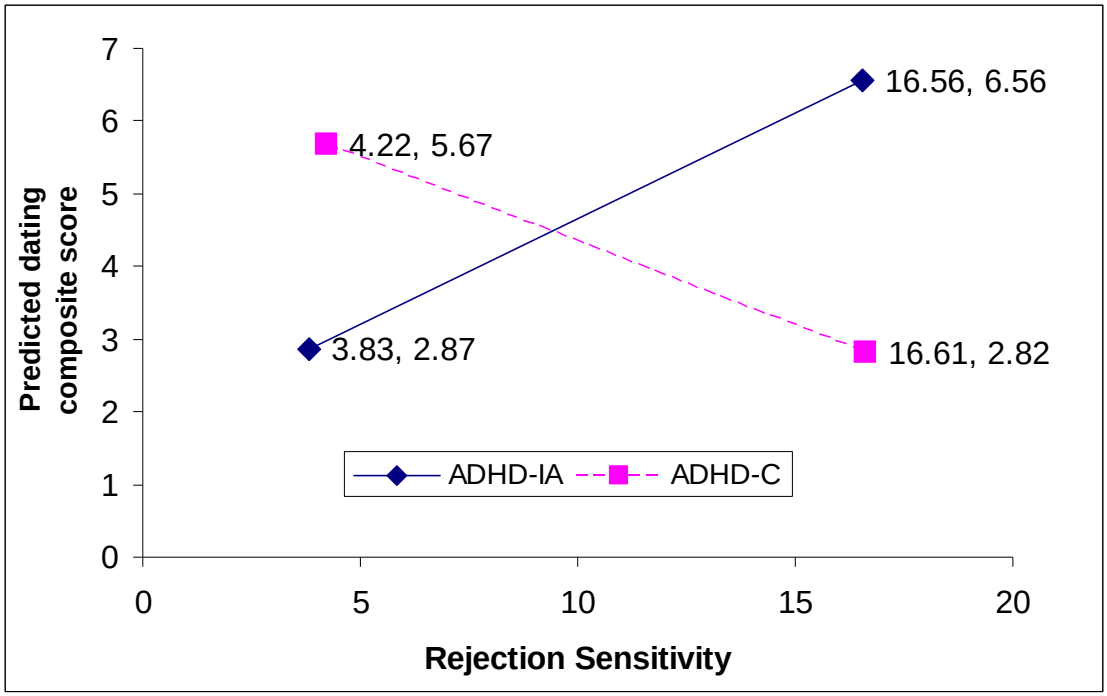

Figure 1. Regression lines for ADHD-Inattentive type (ADHD-IA; *n* = 22) and ADHD-Combined type (ADHD-C; *n* = 30) groups depicting the significant interaction effect of self-reported RS x ADHD subtype on dating milestones composite score. As noted in Table 2, a lower dating composite means earlier and more extensive dating experience. Lines shown here represent the entire range of response within these groups for RS. Point values listed are for X (RS) and Y (predicted dating milestones composite score) axes.

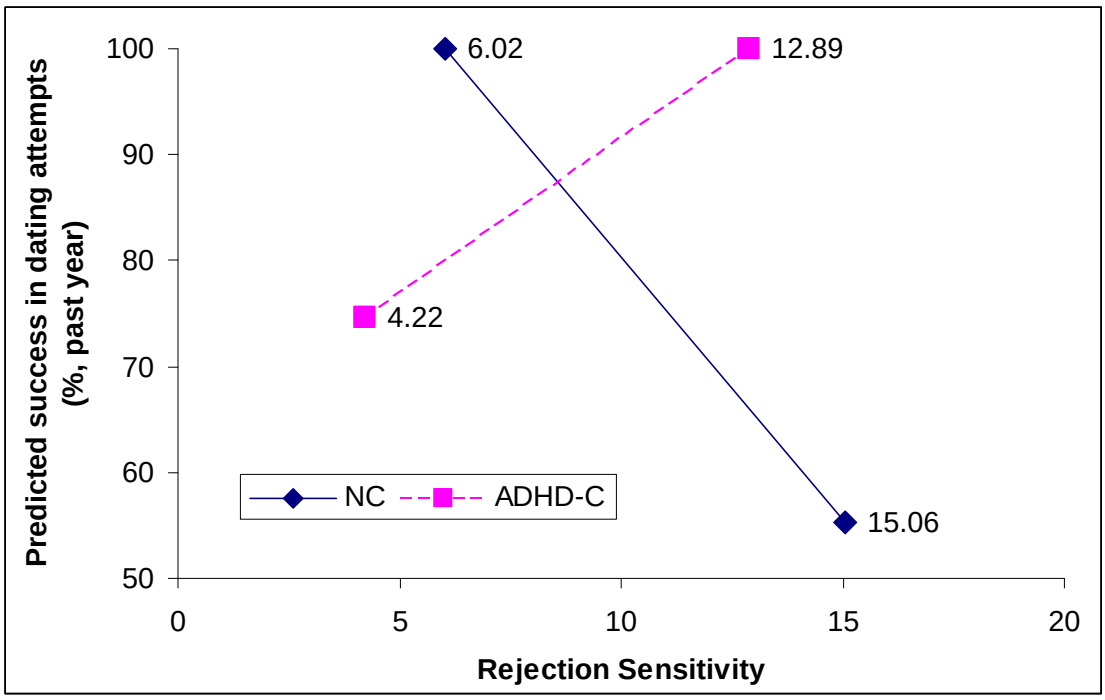

Figure 2. Regression lines for non-diagnosed controls (NC; *n* = 21) and ADHD-Combined type (ADHD-C; *n* = 28) groups depicting the significant interaction effect of self-reported rejection sensitivity (RS) x group on success in dating attempts in the past year. Lines shown here are capped where the predicted value of success in dating attempts reaches 100%; the actual range of RS for the NC group is 5.06-15.06, and for the ADHD-C group is 4.22-16.56. Point values listed are for the X axis (RS).

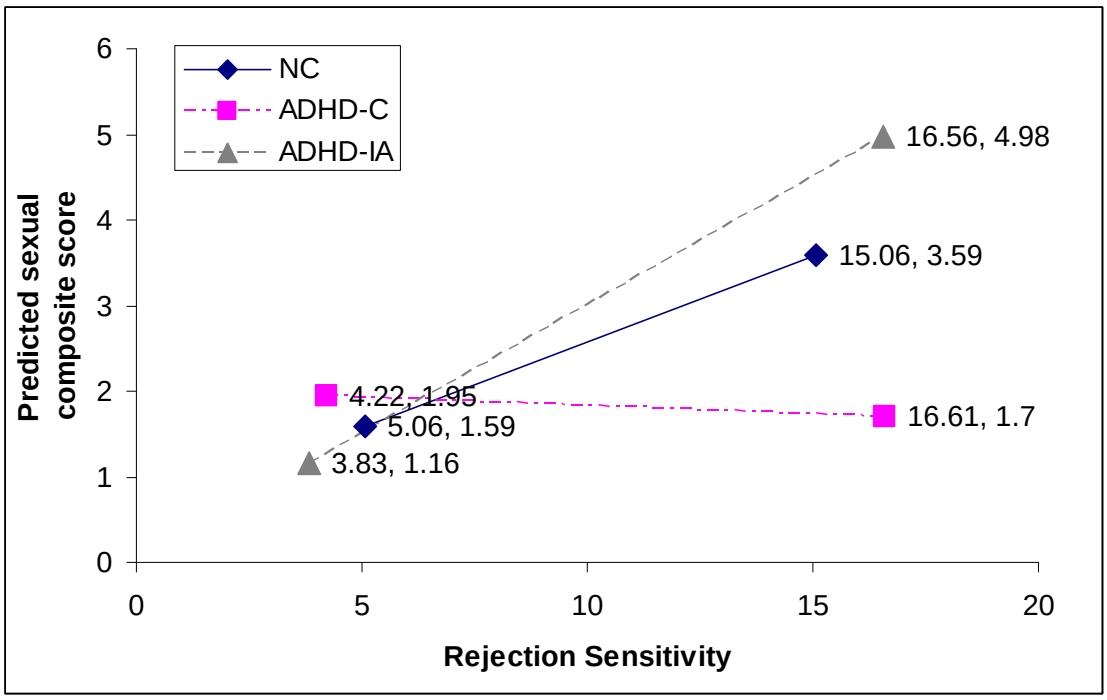

Figure 3. Regression lines depicting rejection sensitivity (RS) and predicted sexual milestones composite score in the non-diagnosed control (NC; *n* = 21), ADHD-Inattentive type (ADHD-IA; *n* = 22), and ADHD-Combined type (ADHD-C; *n* = 29) groups. Significant interaction effects were noted for RS and group in multiple regressions for NC and ADHD-C as well as ADHD-IA and ADHD-C combinations. As noted in Table 2, lower sexual composite scores mean earlier and broader sexual experiences. Lines shown here represent the entire range of response within these groups for RS. Point values listed are for X (RS) and Y (predicted sexual milestones composite score) axes.

Table 7
Selected Effect Sizes

	NC vs. ADHD-C	NC vs. ADHD-IA	ADHD-C vs. ADHD-IA
self-reported SM	-.47	-.05	.43
Average SM change[1]	-.29	-.68	-.53
investment index	-.26	.32	.6
self-rated LWMAT	-.09	.77	.81
frequency of dates in relationship	-.25	.51	.63
# of women dated	-.84	-.59	.37
time in relationship (%)[1]	-.5	.07	.59
sexual milestones composite[1,2]	.55	-.3	-.77
friend support scale	.17	.55	.35
self-esteem	.84	.62	-.31

Note. [1] = see Table 2 for full explanation of this composite variable. [2] = lower scores equate to earlier and broader experience. Effect size (absolute value) > .20 = small, > .50 = medium, > .80 = large (Cohen, 1992). "ADHD" = Attention-Deficit/Hyperactivity Disorder. "IA" = Inattentive. "C" = Combined subtype. "NC" = non-diagnosed control. "SM" = self-monitoring. "Average SM change" = average amount of change *toward* the experimenter's preferences (i.e., potential self-monitoring) on manipulated SRSIP variables. Negative effect sizes indicate lower values in the first group listed; positive values indicate higher values in the first group listed. Effect sizes are Cohen's *d*.

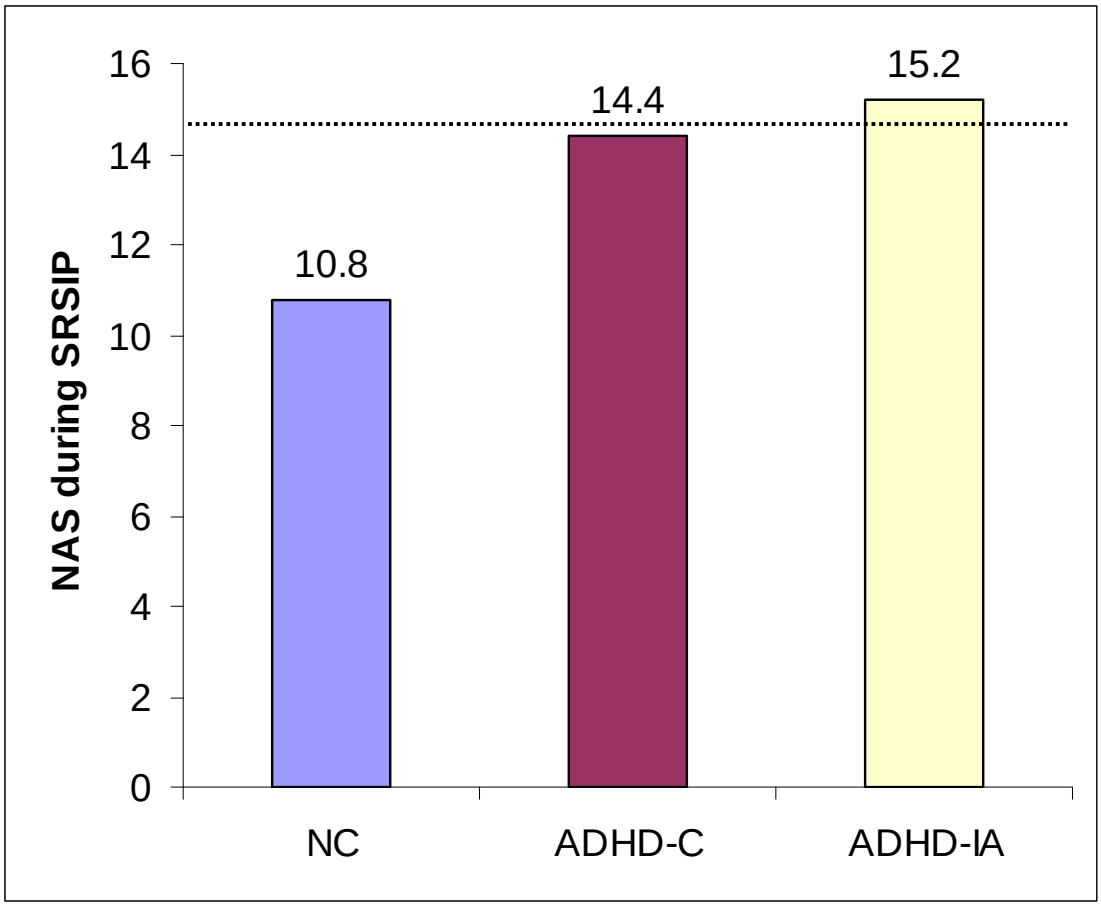

Figure 4. Mean Negative Affect Scale (NAS) scores reported immediately after the experimenter-participant interaction during the SRSIP for non-diagnosed control (NC; *n* = 24), ADHD-Combined type (ADHD-C; *n* = 31), and ADHD-Inattentive type (ADHD-IA; *n* = 22) groups. Dotted line indicates the norming sample mean score (= 14.8, *SD* = 5.4) derived by Watson and colleagues (1988) for in-the-moment negative affect ratings.

Appendix 1: Unpublished Measures

Biographical Information Questionnaire

It is very important that you complete this information collected on this questionnaire is accurate. Please read each item carefully and be as frank and honest as you can. This information will only be used to compare participants in the study and to qualify any final results.

1. *How old are you?* _____ years, _____ months (round months up)

---

2. *What is your ethnicity?* (circle one; if "other," please elaborate)

African-American Hispanic Asian Caucasian
Other: _____

---

3. *What is your sexual preference?* (circle one)

Heterosexual Homosexual Bisexual

---

4. *Please indicate your mother's and father's job during the last year (ex., auto mechanic, carpenter, orthodontist). "Mother" and "Father" can refer to a step parent or other person in your life; we are simply interested in the professions of the 2 adults that give you the most parental support. "Homemaker" is a valid and worthwhile career: please list this if it best describes one of your parents.*

Mother's profession: _____

Father's profession: _____

---

5. *What was your SAT or ACT score*? _____

---

6. *What is your highest completed education level?* (circle best response)

high school/ GED	1 year college	2 years college	3 years college	4 or more years college

---

7. *Have you ever had any serious medical problems* (i.e., needing extensive outpatient procedures, hospital stays, surgical procedures, or chronic treatment)?

yes no

If yes, for *what condition* and *when*?:

---

8. *Have you ever been given any psychiatric diagnosis* (ex., unipolar depression, panic disorder, ADD/ADHD)?

yes no

If yes, *what diagnosis* and *when*?:

_____

_____

Who gave you this diagnosis (was it a psychiatrist, family physician, psychologist, counselor, other mental health professional)?: _____

9. *Have you at any time received treatment for a psychiatric condition, including ADHD* (counseling, prescription medication, psychoanalysis, etc.)?

yes no

If yes, *what treatment* did you receive?:

_____

_____

If yes, *for how long*? *Is it ongoing*?:

_____

_____

Dating and Sexual Inventory

Please indicate the age at which you first were in the following sexual and dating situations. Use the following scale; if you have had these experiences, either before age 14 or after age 18, please write the age that you first experienced that situation in the blank provided. Also, <u>if you have not yet had an experience listed, circle ">18" but leave the age blank empty</u>.

				Years old			
1. first dating attempt (asking someone out)	< 14 (age:__)	14	15	16	17	18	>18 (age:__)
2. first actual date (an event like a movie with a specific, consenting partner)	< 14 (age:__)	14	15	16	17	18	>18 (age:__)
3. first regular dating (more than once every 2 months)	< 14 (age:__)	14	15	16	17	18	>18 (age:__)
4. first steady dating (regular dating with one partner)	< 14 (age:__)	14	15	16	17	18	>18 (age:__)
5. held hands with romantic partner	< 14 (age:__)	14	15	16	17	18	>18 (age:__)
6. continuously kissed romantic partner for 1 minute or longer	< 14 (age:__)	14	15	16	17	18	>18 (age:__)
7. touched romantic partner's bare breasts	< 14 (age:__)	14	15	16	17	18	>18 (age:__)
8. was completely naked with romantic partner	< 14 (age:__)	14	15	16	17	18	>18 (age:__)
9. had penis stimulated manually by partner to orgasm (hand job)	< 14 (age:__)	14	15	16	17	18	>18 (age:__)
10. manually stimulated	< 14 (age:__)	14	15	16	17	18	>18 (age:__)

romantic partner's vagina (under her clothes)							
11. had penis stimulated orally by partner to orgasm (blow job)	< 14 (age:__)	14	15	16	17	18	>18 (age:__)
12. orally stimulated romantic partner's vagina (went down on her)	< 14 (age:__)	14	15	16	17	18	>18 (age:__)
13. had vaginal sex	< 14 (age:__)	14	15	16	17	18	>18 (age:__)
14. had anal sex	< 14 (age:__)	14	15	16	17	18	>18 (age:__)

15. please list all of the people who you have had a romantic relationship with (either sexual or dating), *using only their first and last initials*, below. Please include your current romantic partner (i.e., girlfriend, wife) if you are in a relationship now. Beside each set of initials that you list, indicate the duration of the relationship in months, rounding up (for example, 4 ½ months = "5"). Any relationship lasting between one occasion (i.e., one night stand, one date) and two weeks should be listed; these very short relationships should have a "1" duration.

Some people do not remember all of their romantic parters; do your best to account for all of yours here, and, if you forget their initials, just make some up for that person.

Name	# Months	Name	# Months	Name	# Months
Name	# Months	Name	# Months	Name	# Months
Name	# Months	Name	# Months	Name	# Months
Name	# Months	Name	# Months	Name	# Months
Name	# Months	Name	# Months	Name	# Months
Name	# Months	Name	# Months	Name	# Months
Name	# Months	Name	# Months	Name	# Months
Name	# Months	Name	# Months	Name	# Months

16. Are you currently in a romantic (dating or more serious) relationship?: Y / N

If you answered no ("N") to #16, please skip to question #20;
if you answered yes ("Y"), continue with question #17.

17. Is your romantic relationship a "long-distance" relationship (i.e., your partner lives in another city that requires significant travel to visit)?: Y / N

For questions #18-19, use the following scale:

1 = once a month or less
2 = 1-2 times per month
3 = 3-4 times per month
4 = 1-2 times per week
5 = 3-4 times per week
6 = 5-6 times per week
7 = once or more every day

18. How frequently do you see your romantic partner: _____

19. How frequently do you and your partner have dates (i.e., events/activities that involve just the two of you)?: _____

20. In the past year, how many people have you asked out on a date (including current partner if dating)?: _____

21. Of those people you asked out in the last year, how many agreed to go out with you on a date?: _____

22. Would you like to date more frequently? Y / N

Please describe why/why not in the space provided below (use back if necessary).

Break Up Questionnaire

Fill this questionnaire out if you have ever been in a dating relationship that came to an end. If you have never dated, you may skip this form and go on to the next. *In completing this form, please keep in mind the most recent dating relationship that ended in a breakup*.

How long ago did this relationship end? _____ years, _____months (round up)
How long did this relationship last? _____ years, _____ months (round up)

Why did you and your dating partner break up? Check every item that describes your situation.

___ a. You and your former partner had different values.
___ b. You and your former dating partner had different interests, such as hobbies and activities.
___ c. You weren't in love with your former dating partner any longer.
___ d. Your former dating partner no longer loves you.
___ e. You started dating someone else that you spend more time with and felt closer to that your former dating partner.
___ f. Your former dating partner started dating someone else whom she felt closer to and spent more time with.
___ g. You no longer wanted to maintain a long-distance relationship.
___ h. Your former dating partner no longer wanted to maintain a long-distance relationship with you.
___ i. You felt that you were giving more to the relationship than you were receiving.
___ j. Your former dating partner felt that she was giving more to the relationship than she was receiving.
___ k. You felt that it was the wrong time of your life to be seriously involved in a relationship.
___ l. Your former dating partner felt that it was the wrong time in her life to be seriously involved in a relationship.
___ m. You and your former dating partner did not resolve problems in the relationship effectively.
___ n. You and your former dating partner did not talk to each other about feelings you had toward each other and/or your relationship.

Of all the reasons you checked above, which would you say was the most influential reason for your breakup?

Write the letter of the reason in the blank: _____ was the most influential reason.

Other than the factors mentioned above, what would you say were additional reasons for the breakup? (Use the space below or on the back to give your answer.)

About My Friendships

These questions will ask you to describe your network of friends in various ways. Please carefully read the instructions for each set of items below.

Section 1 directions: please list all of the people who you consider to be close friends, *using only their first and last initials*, below. Do not include your current romantic partner (i.e., girlfriend, wife) or close family (i.e., siblings, parents) here. You should, however, list all other close friends, both male and female. Beside each set of initials that you list, indicate the frequency that you usually have contact with that person using the following scale:

1 = once a month or less
2 = 1-2 times per month
3 = 3-4 times per month
4 = 1-2 times per week
5 = 3-4 times per week
6 = 5-6 times per week
7 = once or more every day

Most people do not list nearly as many close friends as there are spaces below; please remember to list only those you consider "close," and do not list your current romantic partner, siblings, or parents here.

Name	Frequency	Name	Frequency	Name	Frequency
Name	Frequency	Name	Frequency	Name	Frequency
Name	Frequency	Name	Frequency	Name	Frequency
Name	Frequency	Name	Frequency	Name	Frequency
Name	Frequency	Name	Frequency	Name	Frequency
Name	Frequency	Name	Frequency	Name	Frequency
Name	Frequency	Name	Frequency	Name	Frequency
Name	Frequency	Name	Frequency	Name	Frequency

Note. Section 2 of this questionnaire was the 9-item friend support scale of the Provision of Social Relationships measure; see Turner et al. (1983).

Measure of Occupational Interests

This questionnaire focuses on the degree to which aspects of a job or profession are important to you. In other words, consider what you believe is the ideal job, and then rate how prevalent each of the following is in that job. Use the following scale to rate each job dimension:

1	2	3	4	5	6	7	8	9	10
not at all important to me									extremely important to me

1. prestige _____
2. financial reward _____
3. intellectual challenge _____
4. agreeable peers _____
5. leadership opportunities _____
6. physical workspace _____
7. independence _____
8. altruism _____
9. creativity _____
10. variety _____
11. safety _____
12. formal dress code _____

SRSIP Feedback Form

(participant)'s telephone preferences		Will's vocational preferences	
1. Prestige	____	1. Prestige	____
2. Financial Reward	____	2. Financial Reward	____
3. Intellectual Challenge	____	3. Intellectual Challenge	____
4. Agreeable Peers	____	4. Agreeable Peers	____
5. Leadership Opportunities	____	5. Leadership Opportunities	____
6. Physical Workspace	____	6. Physical Workspace	____
7. Independence	____	7. Independence	____
8. Altruism (chance to help others)	____	8. Altruism (chance to help others)	____
9. Creativity	____	9. Creativity	____
10. Variety	____	10. Variety	____
11. Safety	____	11. Safety	____
12. Formal Dress Code	____	12. Formal Dress Code	____

Note. The heading "SRSIP Feedback Form" did not appear on sheet used with participants.

Appendix 2: Self-monitoring Scale

The statements on the following pages concern your personal reactions to a number of different situations. No two statements are exactly alike, so consider each statement carefully before answering. If a statement is *TRUE* or *MOSTLY TRUE* as applied to you, circle the *T* (for "True") for that item. If a statement is *FALSE* or *NOT USUALLY TRUE* as applied to you, circle the *F* (for "False"). It is important that you answer as frankly and as honestly as you can. Your answers will be kept in strictest confidence.

T **F** 1. I find it hard to imitate the behavior of other people.

T **F** 2. My behavior is usually an expression of my true inner feelings, attitudes, and beliefs.

T **F** 3. At parties and social gatherings, I do not attempt to do or say things that others will like.

T **F** 4. I can only argue for ideas which I already believe.

T F 5. I can make impromptu speeches even on topics about which I have almost no information.

T F 6. I guess I put on a show to impress or entertain people.

T F 7. When I am uncertain how to act in a social situation, I look to the behavior of others for cues.

T F 8. I would probably make a good actor.

T **F** 9. I rarely need the advice of my friends to choose movies, books, or music.

T F 10. I sometimes appear to others to be experienceing deeper emotions than I actually am.

T F 11. I laugh more when I watch a comedy with others than when alone.

T **F** 12. In a group of people I am rarely the center of attention.

T F 13. In different situation and with different people, I often act like very different persons.

T = TRUE or MOSTLY TRUE	F = FALSE or NOT USUALLY TRUE

T	**F**	14. I am not particularly good at making other people like me.
T	F	15. Even if I am not enjoying myself, I often pretend to be having a good time.
T	F	16. I'm not always the person I appear to be.
T	**F**	17. I would not change my opinions (or the way I do things) in order to please someone else or win their favor.
T	F	18. I have considered being an entertainer.
T	F	19. In order to get along and be liked, I tend to be what people expect me to be rather than anything else.
T	**F**	20. I have never been good at games like charades or improvisational acting.
T	**F**	21. I have trouble changing my behavior to suit different people and different situations.
T	**F**	22. At a party I let others keep the jokes and stories going.
T	**F**	23. I feel a bit awkward in company and do not show up quite so well as I should.
T	F	24. I can look anyone in the eye and tell a lie with a straigh face (if for a right end).
T	F	25. I may deceive people by being friendly when I really dislike them.

Author's note. Responses that are bold and underlined indicate the direction keyed toward self-monitoring.

Source: Snyder, M. (1974). Self-monitoring of expressive behavior. *Journal of Personality and Social Psychology, 30,* 526-537.

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Vita

William ("Will") Henry Canu was born in Birmingham, Alabama, on October 31, 1972, the son of Pierre and Victoria Canu. He graduated from The Hotchkiss School in 1990, then went on to earn a B.A. in psychology from Davidson College in 1994. After three years of working in industry, Will spent a year as a research assistant on major developmental and psychopharmacological studies at the University of North Carolina—Greensboro and Duke University before enrolling in the clinical psychology doctoral program at The University of Texas at Austin (UT) in 1998. His work there has included a minor in child and adolescent issues and research leading to several publications and conference presentations. Additionally, Will served nearly continuously as a teaching assistant or lead instructor for various undergraduate psychology courses. He was selected as the Janet T. Spence Teaching Award winner—for outstanding performance as a graduate instructor of psychology at UT—for 2002-2003. During this past academic year, Will has trained as a pre-doctoral psychology intern at the SUNY Upstate Medical University Child and Adolescent Psychiatry Clinic in Syracuse, New York. Will has accepted the position of Assistant Professor of Clinical Psychology at the University of Missouri—Rolla, to begin in Fall 2004. Will lives with his wife, Rebekah; they enjoy long walks with their dog, Maggie, traveling to new places (foreign and domestic), and great music, food, books, and films.

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